HITACHI

SERVICE MANUAL

TK | No.6328E

VM-E35A/H39A
VM-H37E/H38E/H39E

Troubleshooting Guide

This manual is issued for you to use the self-diagnosis functions incorporated in the following 8mm video camera/recorder models effectively. Use this manual together with the following manuals when servicing and inspecting the video block in these models.

MODEL	*TITLE*	*MANUAL No.*
VM-E35A	Service Manual	No. 3681E
VM-H39A	Service Manual	No. 3661E
VM-E35A/ VM-H39A	Service Manual (Supplement)	No. 3735E, F
VM-H37E	Service Manual	No. 3670E, G No. 3672F
VM-H37E	Service Manual (Supplement)	No. 3734E, G No. 3737F
VM-H38E/ VM-H39E	Service Manual	No. 6314E, G No. 6315F
SH MECHANISM	Service Manual	No. 3711E, G, F

8 Hi8

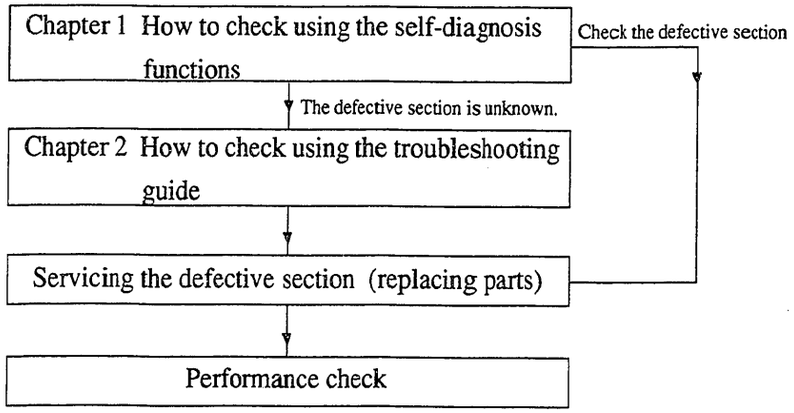
SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT

8mm VIDEO / CAMERA RECORDER

July 1993 TOKAI Consumer Electronics Division

********** Before Using This Manual **********

Use this manual and perform servicing, following the flowchart shown below.


Chapter 1 How to check using the self-diagnosis functions
Check the defective section
The defective section is unknown.
Chapter 2 How to check using the troubleshooting guide
Servicing the defective section (replacing parts)
Performance check

****

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Before checking PAL models

- Although PAL modeis use SW25 head switching pulses, SW30 is displayed in the self-diagnosis function display. Read this as SW25.
- "PAL" appears above the " " mark in the self-diagnosis function display for PAL models, but this is omitted in this manual.

CHAPTER 2

How to Check Using the Troubleshooting Guide

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How to Check Using the Self-Diagnosis Functions

1. Overview of Self-Diagnosis Functions

The VM-H39A has the following self-diagnosis functions.

- A mode: Occasional defect self-diagnosis function
- B mode: Mechanical block self-diagnosis function

Fig. 1 - 1 is a block diagram of an 8-mm camcorder. The sections enclosed by broken lines can be diagnosed by the self-diagnosis functions.

The self-diagnosis functions are engaged by the system control main microcessor (IC901) that detects, stores in memory and displays data related to defects in the mechanical block control system.

Fig. 1 - 2 shows the detection mothod of self-diagnosis.

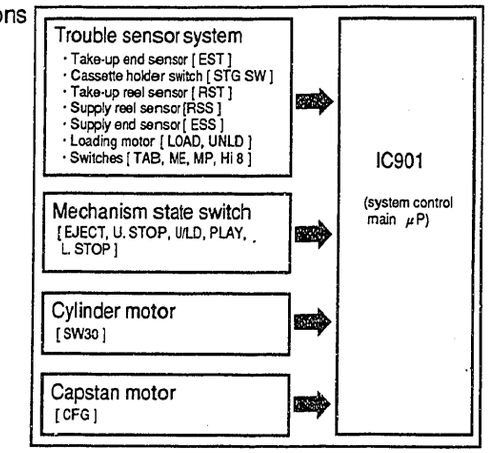

Trouble sensor system
· Take-up end sensor [EST]
· Cassette holder switch [STG SW]
· Take-up reel sensor [RST]
· Supply reel sensor [RSS]
· Supply end sensor [ESS]
· Loading motor [LOAD, UNLD]
· Switches [TAB, ME, MP, Hi 8]
Mechanism state switch
[EJECT, U. STOP, U/LD, PLAY, L. STOP]
Cylinder motor
[SW30]
Capstan motor
[CFG]
IC901
(system control main μP)

Fig. 1 - 2 Detection Method of Self-Diagnosis Function

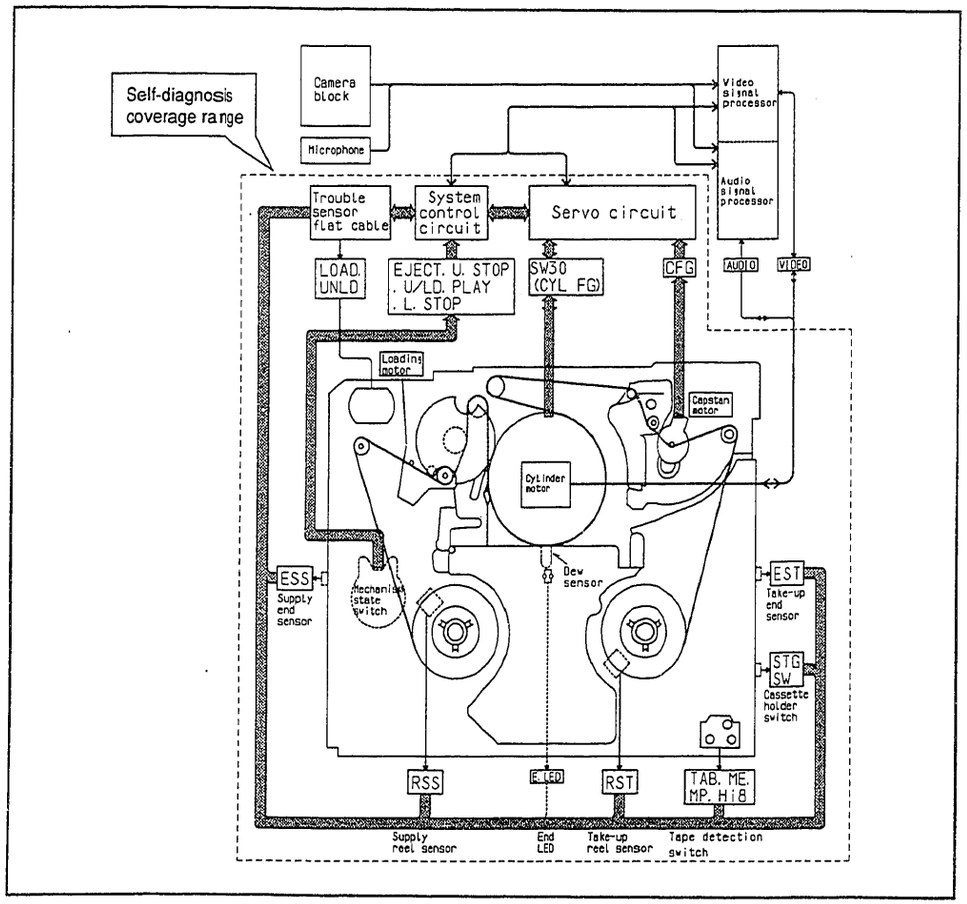


Fig. 1 - 1 Self-diagnosis coverage range

2. Use of Self-Diagnosis Functions

2-1. A mode (occasional defect self-diagnosis function)

Fig. 1 - 3 shows the operation of the A mode.

This functions can locate defective sections easily when an occasional defect that cannot be reproduced during servicing occurs.

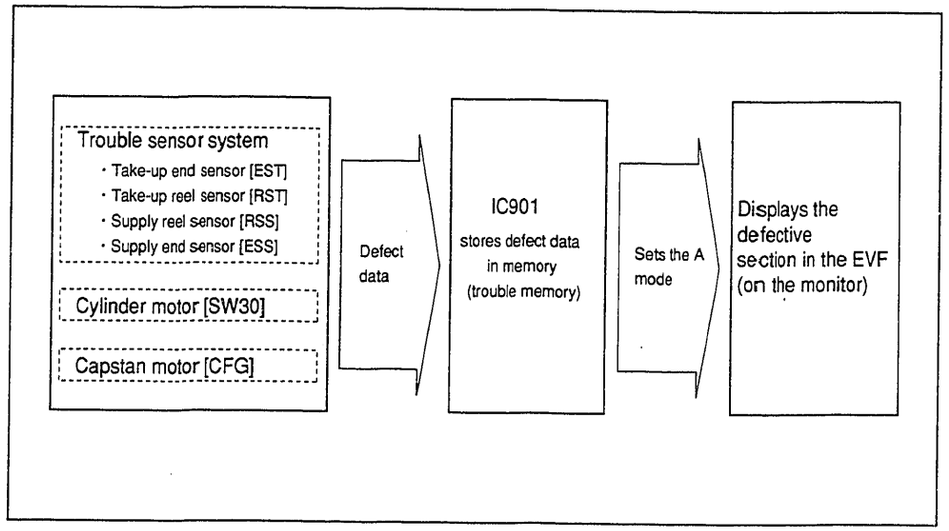

Trouble sensor system
· Take-up end sensor [EST]
· Take-up reel sensor [RST]
· Supply reel sensor [RSS]
· Supply end sensor [ESS]
Cylinder motor [SW30]
Capstan motor [CFG]
Defect data
IC901
stores defect data in memory (trouble memory)
Sets the A mode
Displays the defective section in the EVF (on the monitor)

Fig. 1 - 3 Operation of A mode

As can be seen in Fig. 1 - 3, the A mode functions to let the system control main μP (IC901) store the defect data from the take-up / supply reel and end sensors and cylinder and capstan motors in memory (trouble memory).

Cautions

1. The data is not stored if there is no lithium battery to store the data / time.
2. Only the defect that occurred last is stored.
3. The stored data is erased by the following operation (it is not erased even if the power is turned off).
   (1) Rewind mode
   (2) Fast forward mode
   (3) When the data / time lithium battery and power supply are removed.

2-2. B mode (mechanical block self-diagnosis function)

Fig. 1 - 4 shows the operation of the B mode.

This functions can locate the defective section when a defect occurs in the mechanical block.

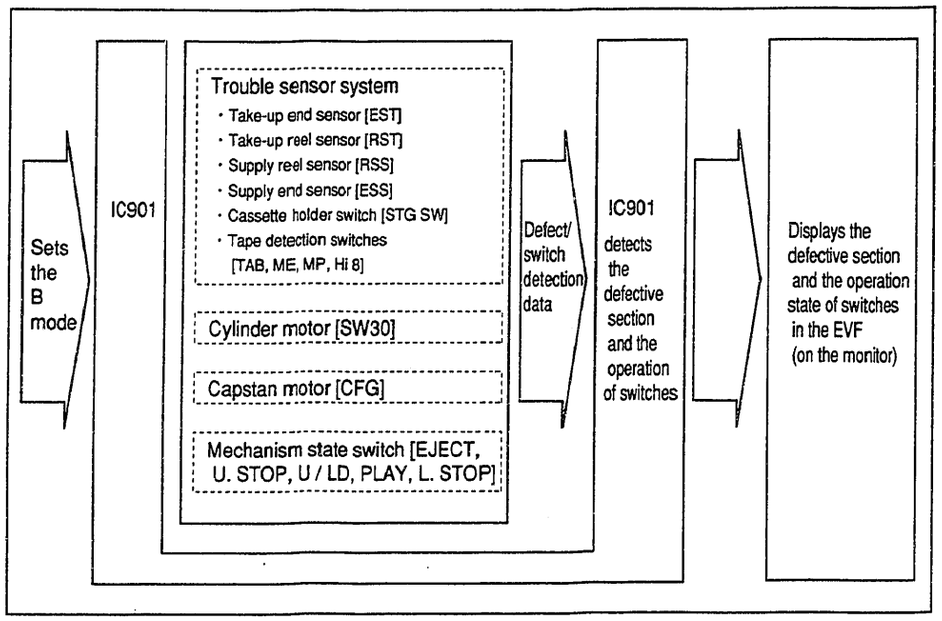

Sets the B mode
IC901
Trouble sensor system
· Take-up end sensor [EST]
· Take-up reel sensor [RST]
· Supply reel sensor [RSS]
· Supply end sensor [ESS]
· Cassette holder switch [STG SW]
· Tape detection switches [TAB, ME, MP, Hi 8]
Cylinder motor [SW30]
Capstan motor [CFG]
Mechanism state switch [EJECT, U. STOP, U / LD, PLAY, L. STOP]
Defect/ switch detection data
IC901
detects the defective section and the operation of switches
Displays the defective section and the operation state of switches in the EVF (on the monitor)

Fig. 1 - 4 Operation of B Mode

As can be seen in Fig. 1 - 4, in the B mode the system control main μ P (IC901) detects and displays the defective section using signals supplied from the trouble sensors, mechanism state switch and loading, cylinder and capstan motors, etc.

2-3. Use

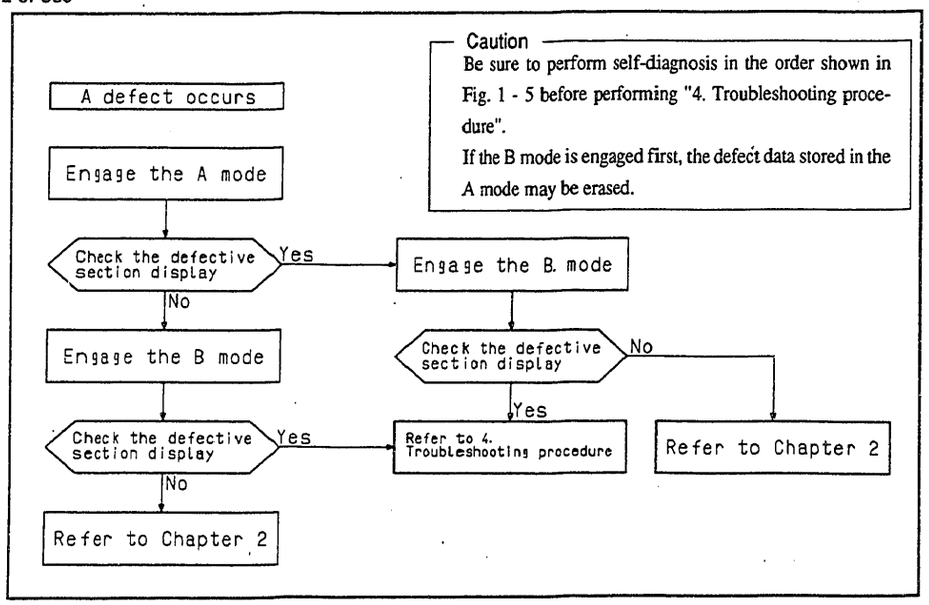
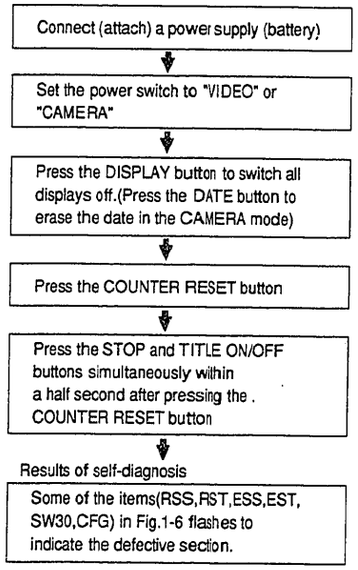

Caution
Be sure to perform self-diagnosis in the order shown in Fig. 1 - 5 before performing "4. Troubleshooting procedure".
If the B mode is engaged first, the defect data stored in the A mode may be erased.
A defect occurs
Engage the A mode
Check the defective section display
Yes
Engage the B mode
No
Engage the B mode
Check the defective section display
No
Yes
Check the defective section display
Yes
Refer to 4. Troubleshooting procedure
Refer to Chapter 2
No
Refer to Chapter 2

Fig. 1 - 5 Use

3. Operation Procedure

3 - 1. How to set to the A mode (occasional defect self-diagnosis function)

The following operations engage the A mode and the details shown in Fig. 1 - 6 are displayed in the EVF (on the monitor).


Connect (attach) a power supply (battery)
Set the power switch to "VIDEO" or "CAMERA"
Press the DISPLAY button to switch all displays off.(Press the DATE button to erase the date in the CAMERA mode)
Press the COUNTER RESET button
Press the STOP and TITLE ON/OFF buttons simultaneously within a half second after pressing the . COUNTER RESET button
Results of self-diagnosis
Some of the items(RSS,RST,ESS,EST, SW30,CFG) in Fig.1-6 flashes to indicate the defective section.

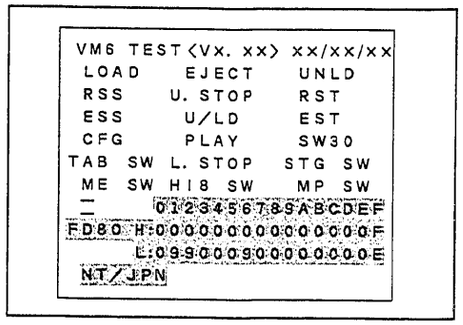


Fig. 1 - 6 Self-Diagnosis Function Display

Cautions

1. The shaded items are not concerned with self- diagnosis.
2. The self-diagnosis mode is identified by the " " mark. If the DISPLAY button is pressed during self-diagnosis by mistake, press it again to display the " " mark again.

To release

Perform either of the following.

(1) Press the STOP and TITLE ON/OFF buttons simultaneously.

(2) Turn the power off.

Table 1 - 1 Details of A Mode Self-diagnosis

Part	Display	Part Name	Display Condition	Page in Troubleshooting Procedure
Trouble sensor	RSS	Supply reel sensor	· The pulse from the supply reel sensor is defective. (The supply reel does not rotate normally in the rewind and reverse search modes)	1 - 8
	RST	Take-up reel sensor	· The pulse from the take-up reel sensor is defective. (The take-up reel does not rotate normally in modes other than rewind and reverse serch.)	1 - 9
	ESS	Supply end sensor	· The signal from the supply end sensor is defective. (It detects the tape end(tape take-up complete).)	1 - 10
	EST	Take-up end sensor	· The signal from the take-up end sensor is defective. (It detects tape rewind complate.)	1 - 15
Cylinder motor	SW30	———	· The SW30(cylinder rotation) pulse is defective. (The cylinder motor does not rotate normally.)	1 - 13
Capstan motor	CFG	———	· The CFG(capstan rotation) pulse is defective. (The capstan motor does not rotate normally.)	1 - 11

3 - 2. How to set to the B mode (mechanical block self-diagnosis function)

The following operations engage the B mode and the details shown in Fig. 1 - 7 (the same as Fig. 1 - 6) are displayed in the EVF (on the monitor).

Connect (attach) a power supply (battery)

↓

Set the power switch to "OFF"

↓

Press the EJECT button to set to the eject state

↓

Press the tape detection switch " Hi 8 MP " on the subchassis (see Fig. 1 - 8) and the DISPLAY button and hold them, then set the power switch to " CAMERA " or " VIDEO "

↓

Set the power switch to " CAMERA " or " VIDEO ",then close the cassette lid within 3 seconds.

↓

The following is the operation during self-diagnosis (see Fig. 1 - 7)

↓

All items except for roughly shaded ones flash during self-diagnosis

↓

After loading, the camcorder unloads and loads, then finally stops in the eject state

↓

Results of self-diagnosis

The items related to normal parts light. The flashing items show the defective sections.

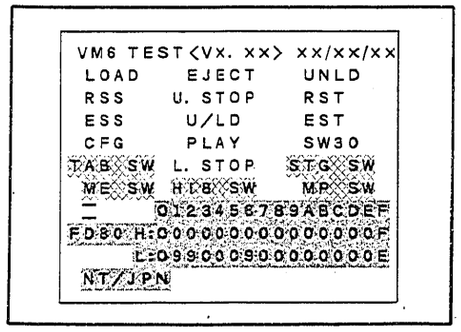


Fig. 1 - 7 Self-Diagnosis Function Display

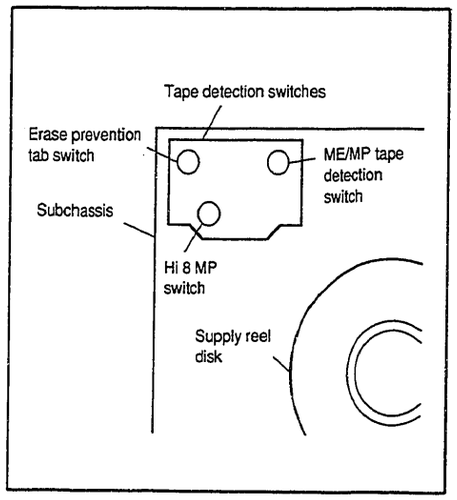


Fig. 1 - 8 Hi - 8 MP switch

Caution

1. The roughly shaded items are for the switches. They light when the switches are pressed. The items related to the switches not pressed keep flashing.
2. The shaded items are not related to self-diagnosis.
3. The self-diagnosis mode is identified by the " 🔍 " mark. If the DISPLAY button is pressed during self-diagnosis by mistake, press it again to display the " 🔍 " mark again.

To release

Perform either of the following

(1) Press the REWIND button.

(2) Close the cassette lid.

(3) Turn the power off.

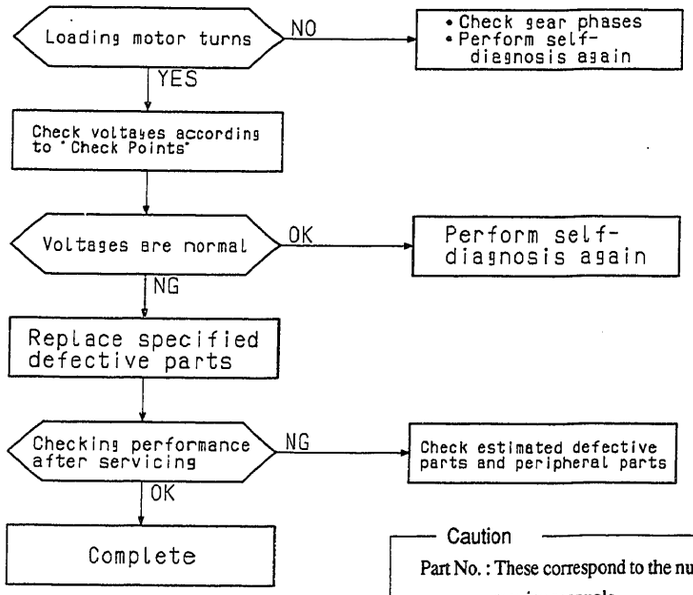
Table 1 - 2 Details of B Mode Self-Diagnosis

Part	Display	Part Name	Display Condition	Page in Troubleshooting Procedure
Trouble sensors	LOAD	Loading motor	· Does not load within 10 seconds. (The loading motor is defective when running forward.)	1 - 7
	UNLOAD	Loading motor	· Does not unload within 10 seconds. (The loading motor is defective when running in reverse.)	1 - 7
	RSS	Supply reel sensor	· The pulse from the supply reel sensor is defective. (The supply reel disk does not rotate normally. There is one pulse or less within a half second.)	1 - 8
	RST	Take-up reel sensor	· The pulse from the take-up reel sensor is defective. (The take-up reel disk does not rotate normally. There is one pulse or less within a half second.)	1 - 9
	ESS	Supply end sensor	· The signal from the supply end sensor is defective. (4 pulses or less within a half second.)	1 - 10
	EST	Take-up end sensor	· The signal from the take-up end sensor is defective. (4 pulses or less within a half second.)	1 - 15
(Switches)	TAB SW	Tape detection switch (on subchassis)	· The erase prevention tab detection switch detects the record inhibit mode.	——
	ME SW	Tape detection switch	· The ME/MP tape detection switch detects MP tape.	——
	MP SW	Tape detection switch	· The Hi 8 MP switch detects normal MP tape.	——
	STG SW	Cassette holder switch (on the cassette holder)	· The cassette holder switch detects the holder open state.	——
	HI 8 SW	Hi 8 auto/off switch (on the main board)	· Detects that the Hi 8 auto/off switch is in the " off " position.	——
Capstan motor	CFG	——	· The CFG (capstan motor rotation) pulse is defective. (The capstan motor does not rotate normally. 64 pulses or less within 0.1 second.)	1 - 11
Cylinder motor	SW 30	——	· The SW 30 (cylinder motor rotation) pulse is defective. (The cylinder motor does not rotate normally. 10 pulses or less within a half second.)	1 - 13
Mechnism state switch	EJECT	Mechanism state switch	· The eject position detection signal is defective. (The eject position is not reached within 3 seconds.)	1 - 12
	U. STOP	Mechanism state switch	· The unloading stop position detection signal is defective. (The unloading/stop position is not reached within 3 seconds.)	1 - 14
	U / LD	Mechanism state switch	· The unloading/loading position detection signal is defective. (The loading position is not reached within 3 seconds.)	1 - 14
	PLAY	Mechanism state switch	· The play position detection signal is defective. (The play position is not reached within 3 seconds.)	1 - 16
	L. STOP	Mechanism state switch	· The loading stop position detection signal is defective. (The loading/stop position is not reached within 3 seconds.)	1 - 16

4. Troubleshooting Proedure

If the defective section is displayed by the self-diagnosis function (A or B mode), perform the following.

If LOAD or UNLOAD flashes



Caution

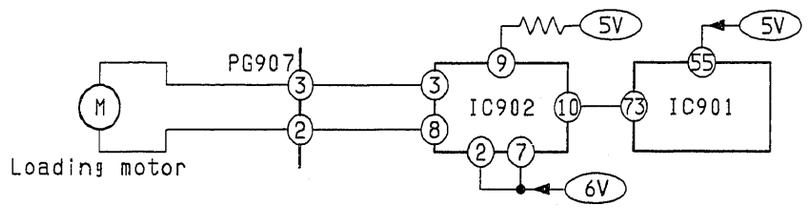
Part No. : These correspond to the numbers in the parts list in the service manuals.

Part location on board : Location on the main board in the service manuals.

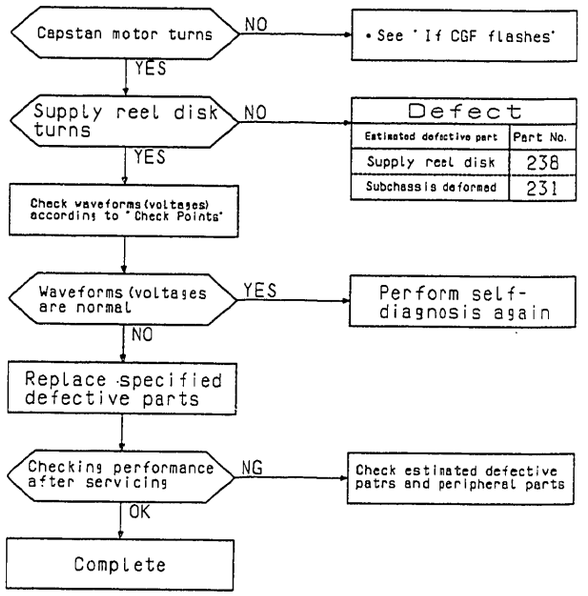
<Check Points>

No.	Check point	Normal waveform/voltage	Check result	Estimated defective part	Part No.	Location on board
1	• Both terminals of loading motor	• The difference in voltage between the terminals is DC 3V or more	OK	• Loading motor	268	——
			OK	• Mechanical block is locked	——	——
			NG	• Trouble sensor flat cable	——	——
2	• IC902-9	• DC5V	NG	• Check 5V3 line	R904 C903	B-2D A-6D
			NG	• Check DC-DC converter	——	——
			OK	• IC902	IC902	B-2D
3	• IC902-2, 7	• DC7.1V	NG	• Check 6V2 line	C902 L902	A-6D A-6D
			NG	• Check DC-DC converter	——	——
			OK	• IC902	IC902	B-2D
			OK	• IC901	IC901	B-1C

<Signal Flow>



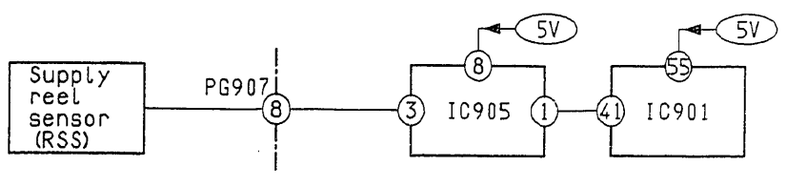
If RSS flashes



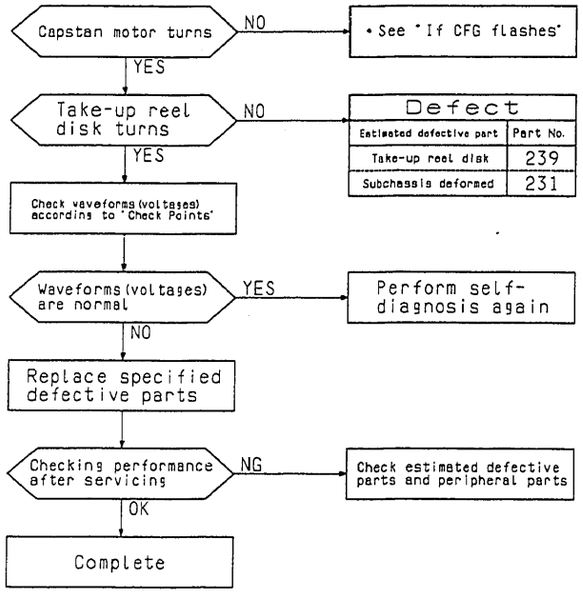
<Check Points>

No.	Check point	Normal waveform/voltage	Check result	Estimated defective part	Part No.	Location on board
1	• PG907-8	2V/200ms 4.5Vp-p(DC)	NG	• Reel sensor • Trouble sensor flat cable	—— ——	—— ——
2	• IC905-1, 3	2V/200ms①4.5Vp-p(DC) ③3.3Vp-p(DC)	NG	• IC905 and peripheral parts	IC905 R984 R986 R994 R996 R997	A-7C B-1C A-7C A-7C B-1C A-7C
3	• IC901-41	2V/200ms 4.5Vp-p(DC)	NG	• IC901	IC901	B-1C

<Signal Flow>



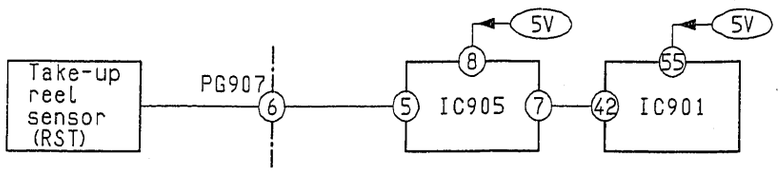
If RST flashes



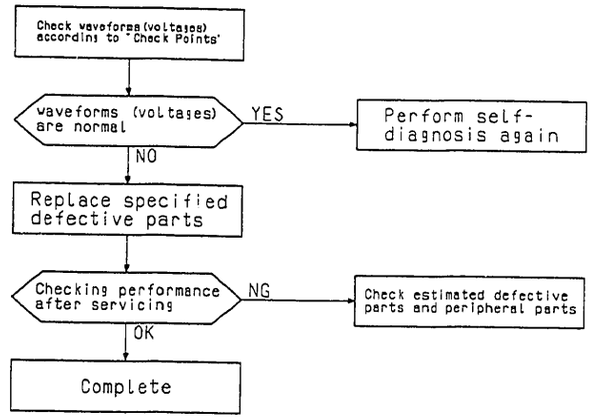
<Check Points>

No.	Check point	Normal waveform/voltage	Check result	Estimated defective part	Part No.	Location on board
1	• PG907-6	2V/200ms 4.5Vp-p(DC)	NG	• Reel sensor • Trouble sensor flat cable	— —	— —
2	• IC905-5, 7	2V/200ms ⑤3.3Vp-p(DC) ⑦4.5Vp-p(DC)	NG	• IC905 and peripheral parts	IC905 R976 R985 R986 R993 R995	A-7C A-7C B-1C A-7C A-7C A-7C
3	• IC901-42	2V/200ms 4.5Vp-p(DC)	NG	• IC901	IC901	B-1C

<Signal Flow>



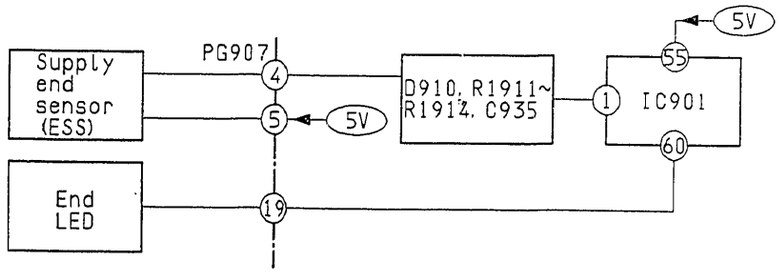
If ESS flashes



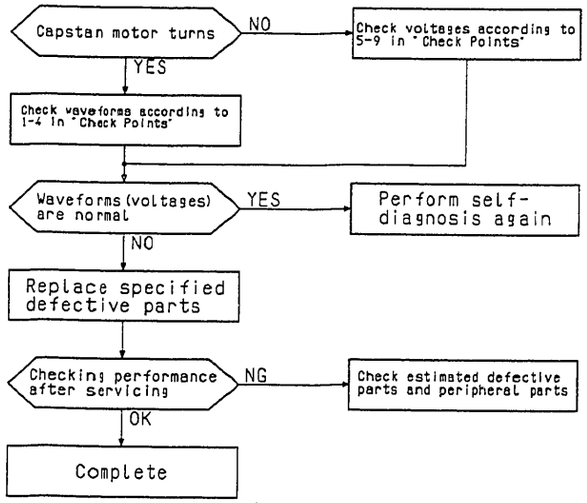
<Check Points>

No.	Check point	Normal waveform/voltage	Check result	Estimated defective part	Part No.	Location on board
1	• IC901-60	2V/10ms 5.2Vp-p	NG	• IC901	IC901	B-1C
2	• PG907-19	2V/10ms 4.8Vp-p	NG	• End LED • Trouble sensor flat cable	— —	— —
3	• PG907-5	• DC5V	NG	• Fuse • Check DC-DC converter	F551 —	A-5D —
4	• PG907-4	50mV/5ms 120mVp-p	NG	• Supply end sensor • Trouble sensor flat cable	— —	— —
5	• IC901-1	50mV/5ms 120mVp-p	NG	• D910 and peripheral circuits	D910 R1911 R1912 R1913 R1914 C935	A-7D A-7D A-7D A-7D A-7D A-7C

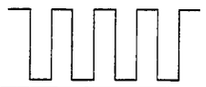
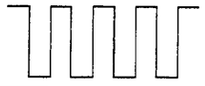
<Signal Flow>



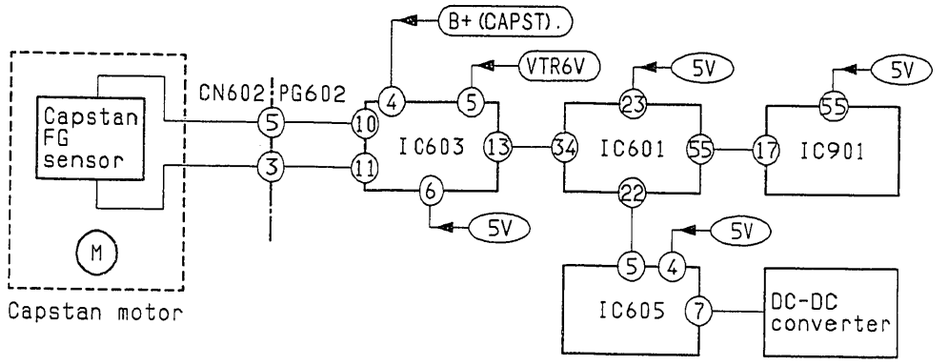
If CFG flashes



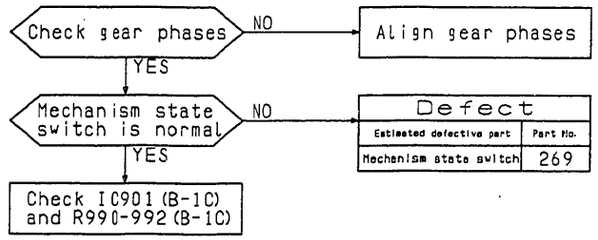
<Check Points>

No.	Check point	Normal waveform/voltage	Check result	Estimated defective part	Part No.	Location on board
1	• PG602-5	20mV/10ms 35mVp-p	NG	• Capstan motor	214	———
2	• IC603-13	1V/0.5ms 3.7Vp-p 	NG	•IC603 and peripheral circuits	IC603 R664 R671 C653 C657	A-3A A-3A A-3A A-3A A-3A
3	• IC601-55	1V/0.5ms 5.0Vp-p 	NG	• IC601	IC601	B-6A
4	• IC901-17	1V/0.5ms 5.0Vp-p	OK	• IC901	IC901	B-1C
5	• IC603-6	• 5V	NG	• Fuse • Check DC-DC converter	F551 —	A-5D ———
6	• IC603-5	• 6.3V	NG	• Fuse • Check DC-DC converter	F551 —	A-5D ———
7	• IC603-4	• Hi voltage	NG	• IC603 and peripheral circuit	IC603 C658	A-3A A-3A
8	• IC605-7	• Hi voltage	NG	• Check DC-DC converter	—	———
9	• IC601-22	• Hi voltage	NG OK	• Q602 and peripheral circuit • IC601	Q602 R1610 R1611 IC601	A-3A A-3A A-3A B-6A

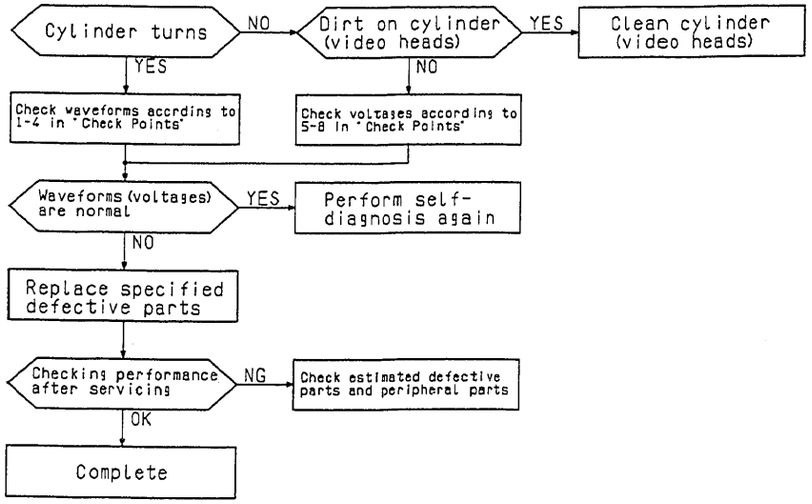
<Signal Flow>



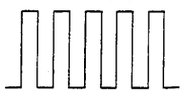
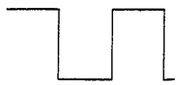
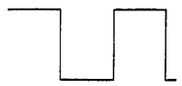
If EJECT flashes



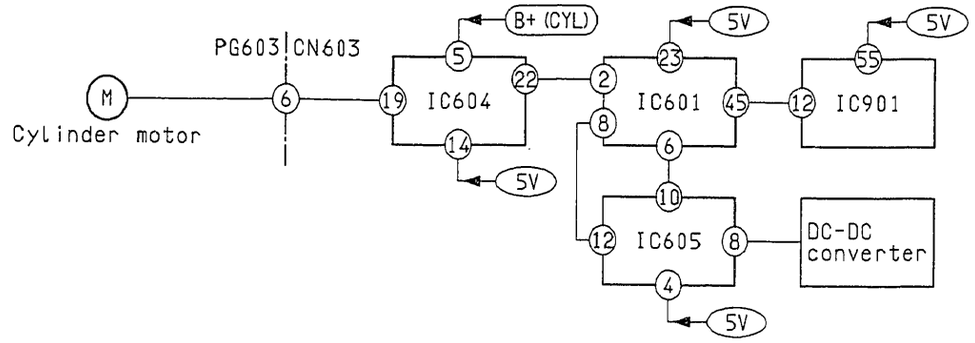
If SW30 flashes



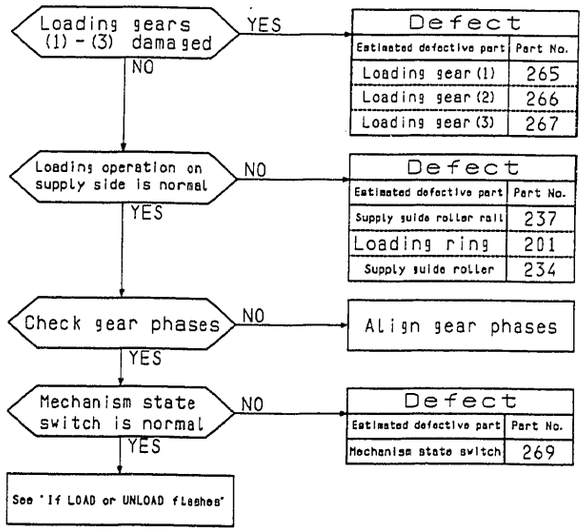
<Check Points>

No.	Check point	Normal waveform/voltage	Check result	Estimated defective part	Part No.	Location on board
1	• P G 6 0 3 − 6	20mV/2ms 75mVp-p	N G	• Cylinder motor	501	—
2	• I C 6 0 4 − 2 2	1V/2ms 4.3Vp-p 	N G	• IC604 and peripheral circuits	IC604 R652 R653 C645 C682	A-4A B-4A B-4A B-4A SUB 1-A
3	• I C 6 0 1 − 4 5 (SW30/25Hz)	1V/5ms 5.1Vp-p 	N G	• I C 6 0 1	IC601	B-6A
4	• I C 9 0 1 − 1 2 (SW30/25Hz)	1V/5ms 5.1Vp-p 	N G	• Check connection between IC601 and IC901	—	—
			O K	• I C 9 0 1	IC901	B-1C
5	• I C 6 0 4 − 5	• Hi voltage	O K	• IC604	IC604	A-4A
6	• I C 6 0 5 − 8	• Hi voltage	O K	• Check DC-DC converter	—	—
7	• I C 6 0 1 − 6	• Hi voltage	N G	• IC605	IC605	A-2A
8	• I C 6 0 1 − 8	• Hi voltage	N G	• IC601	IC601	B-6A

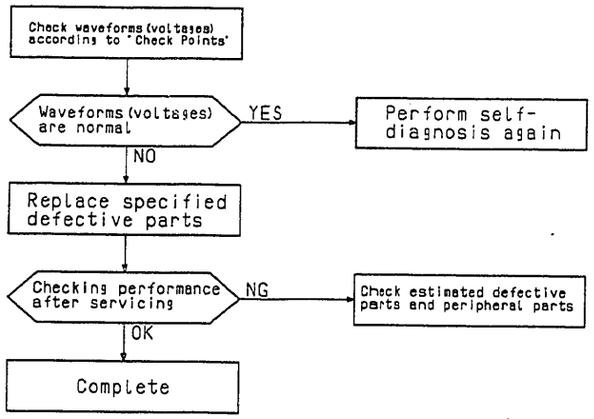
<Signal Flow>



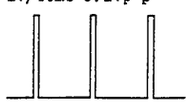
If U. STOP or U / LD flashes



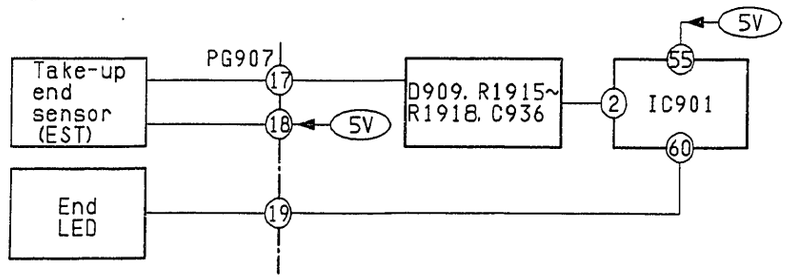
If EST flashes



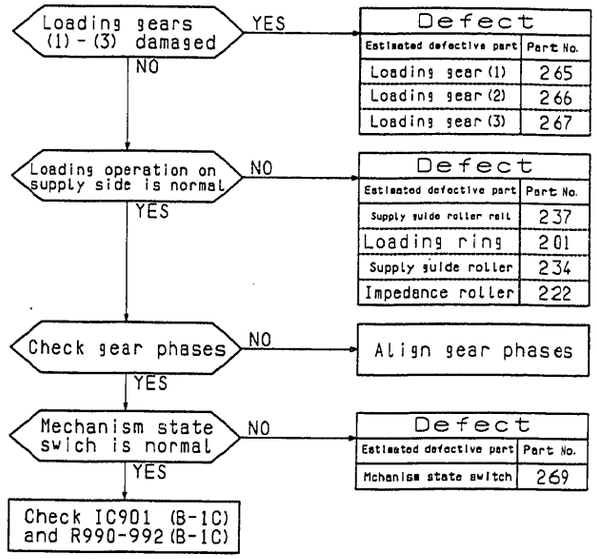
<Check Points>

No.	Check point	Normal waveform/voltage	Check result	Estimated defective part	Part No.	Location on board
1	• I C 9 0 1 – 6 0	2V/10ms 5.2Vp-p 	N G	• I C 9 0 1	IC901	B-1C
2	• P G 9 0 7 – 1 9	2V/10ms 4.6Vp-p	N G	• End LED • Trouble sensor flat cable	— —	— —
3	• P G 9 0 7 – 1 8	• D C 5 V	N G	• Fuse • Check DC-DC converter	F551 —	A-5D —
4	• P G 9 0 7 – 1 7	50mV/5ms 150mVp-p	N G	• Take-up end sensor • Trouble sensor flat cable	— —	— —
5	• I C 9 0 1 – 2	50mV/5ms 150mVp-p	N G	•D909 and peripheral circuits	D909 R1915 R1916 R1917 R1918 C936	A-7D A-7C A-7D A-7D A-7C A-7C

<Signal Flow>



If PLAY or L. STOP flashes



CHAPTER 2

How to Check Using the Troubleshooting Guide

Check as described in chapter 2 if the defective section cannot be located by self-diagnosis described in chapter 1.

Letters and numerals in brackets after the checked parts show the locations on the main circuit board in the service manuals.
Example : (A - 7B)
Address
Surface of board

The video and audio signals can be input to a model without the AV input function in the following .

Note: The following methods are used for adjustment and checking. Do not use them for any purposes other than adjustment or checking.

Modify the AV input cable.
- Change the connection of pin 13 of the AV input cable from ground to pin 2 (DC5V).
(After checking that pin 13 and ground are not connected, Connect pin 13 to pin 2 (DC5V).

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Capstan motor free-runs ..... 2 - 5
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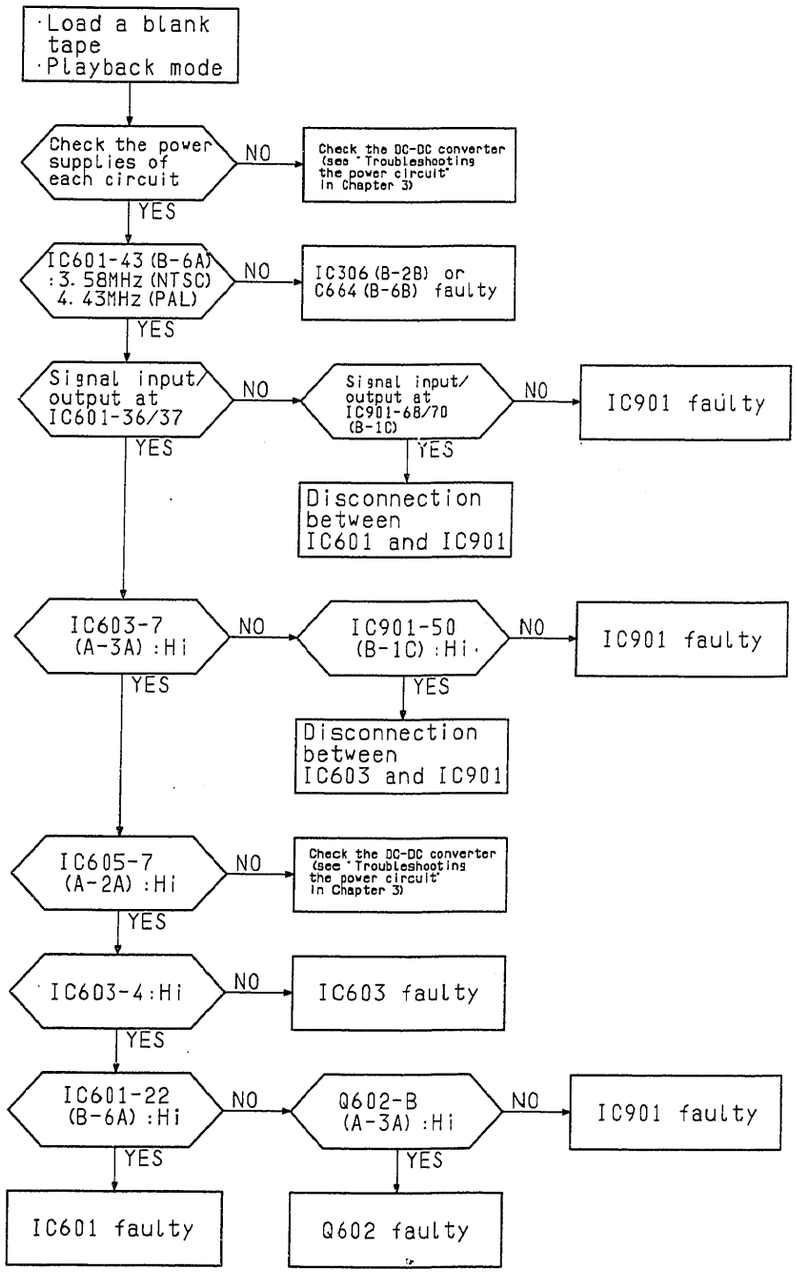
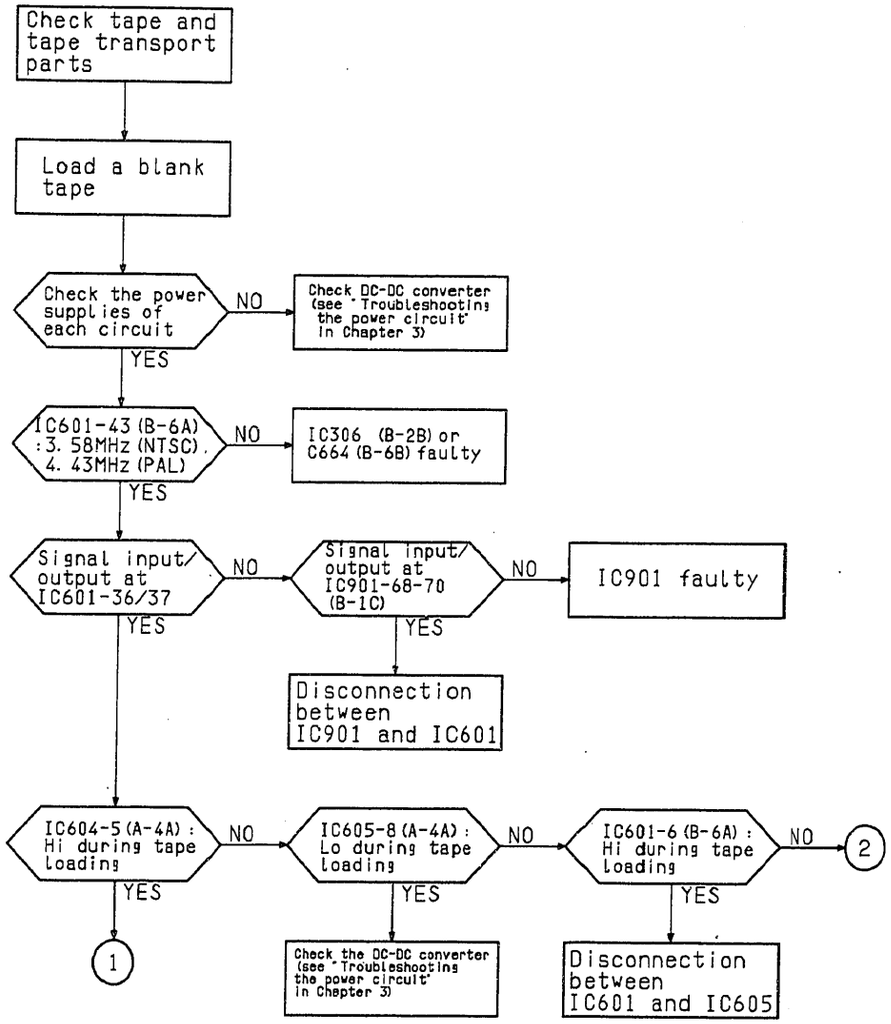
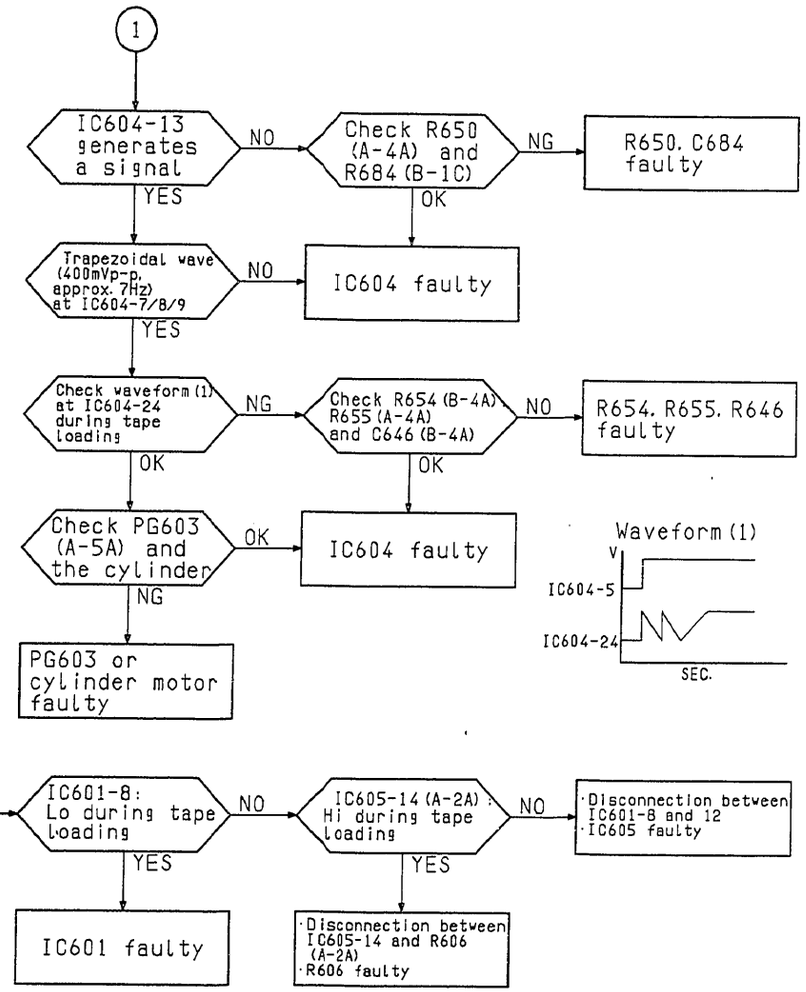
Capstan motor does not turn

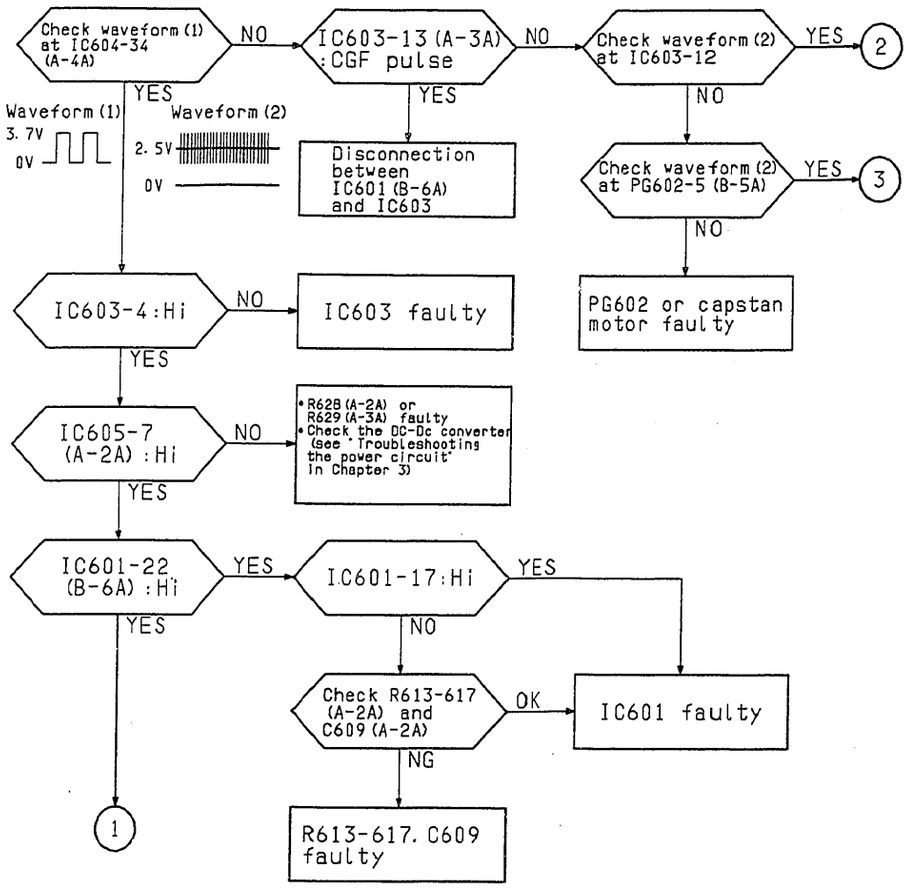


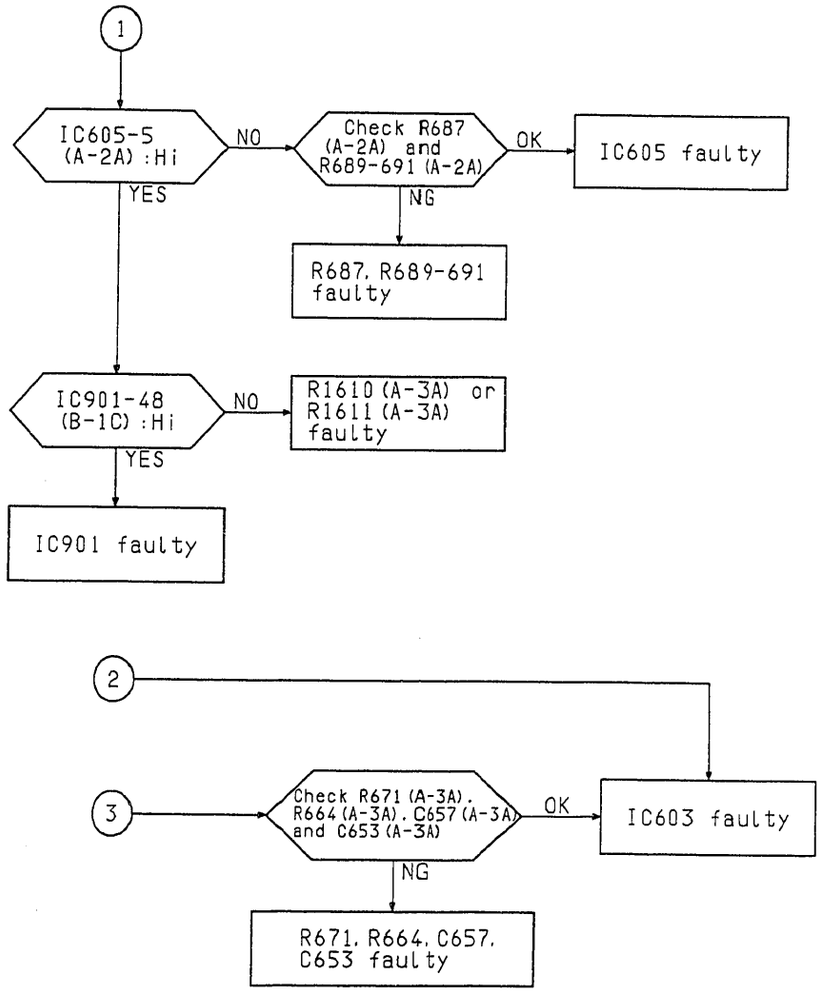
Cylinder motor does not turn



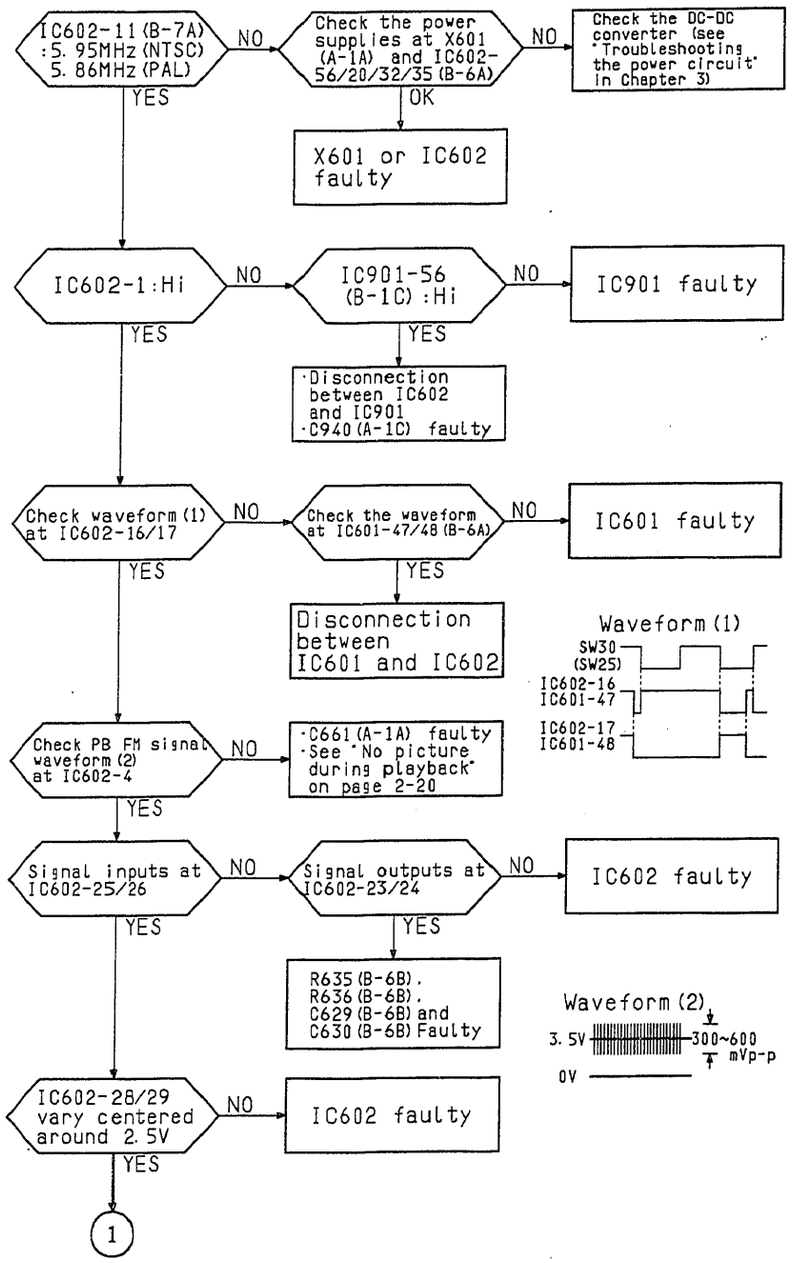


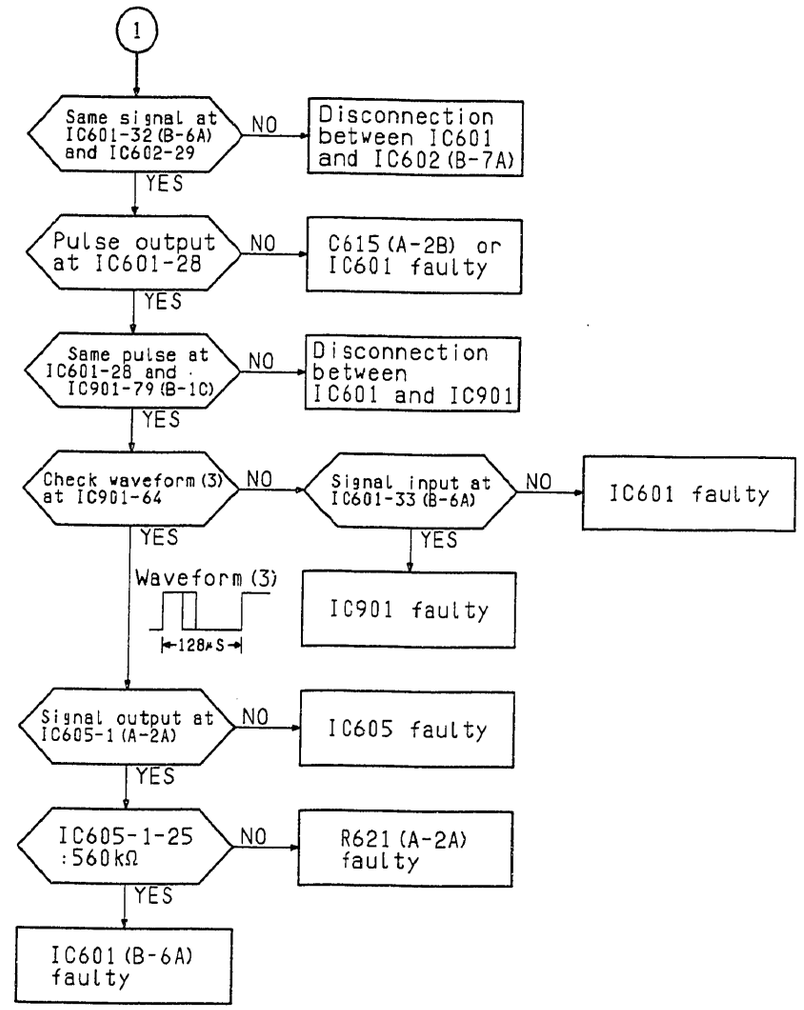
Capstan motor free-runs



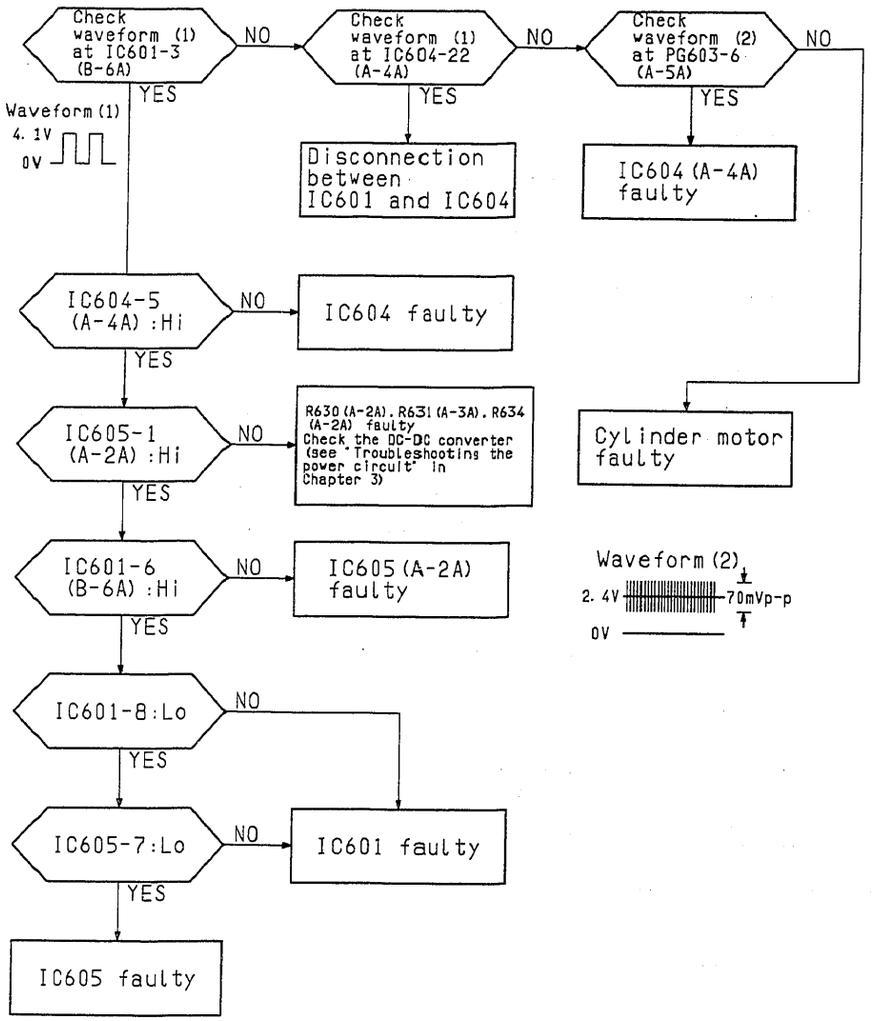


Servo lock comes off during playback

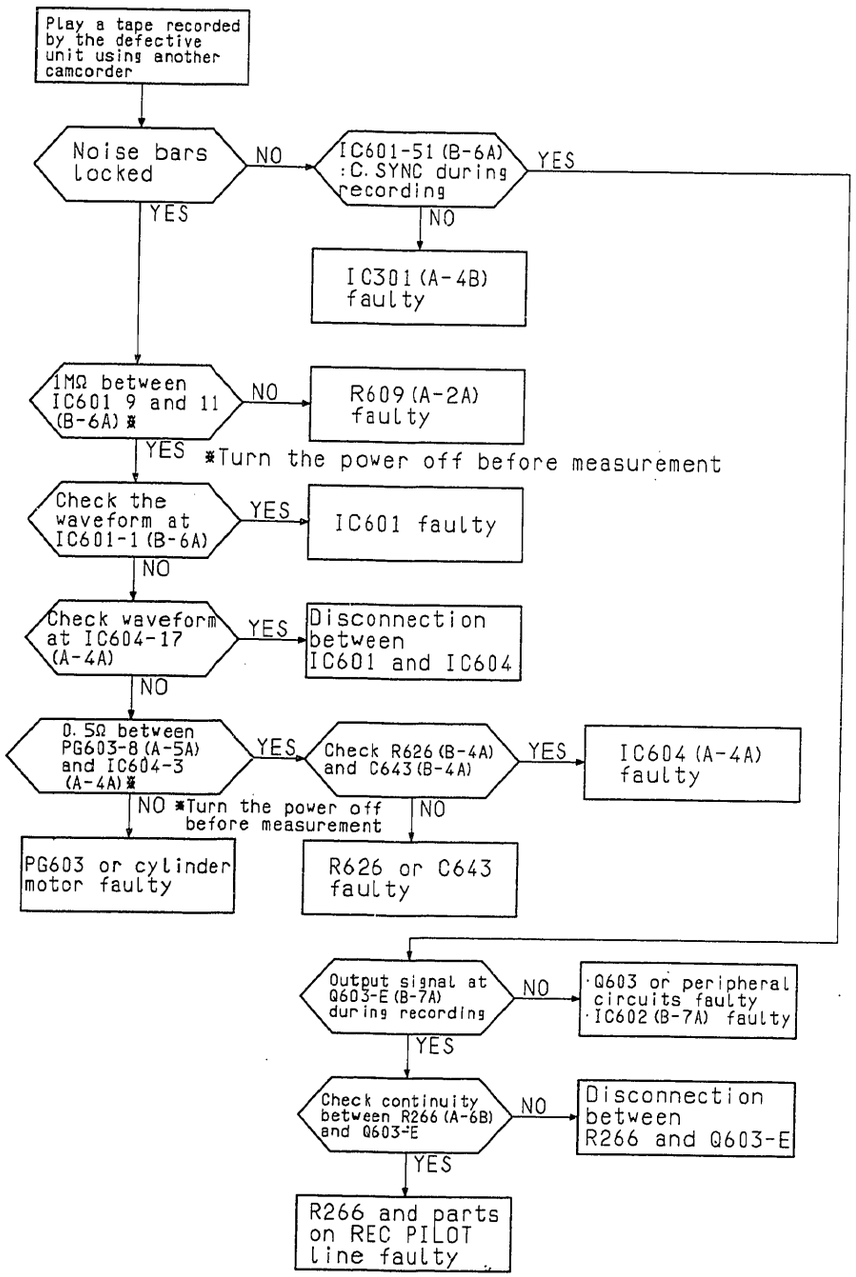




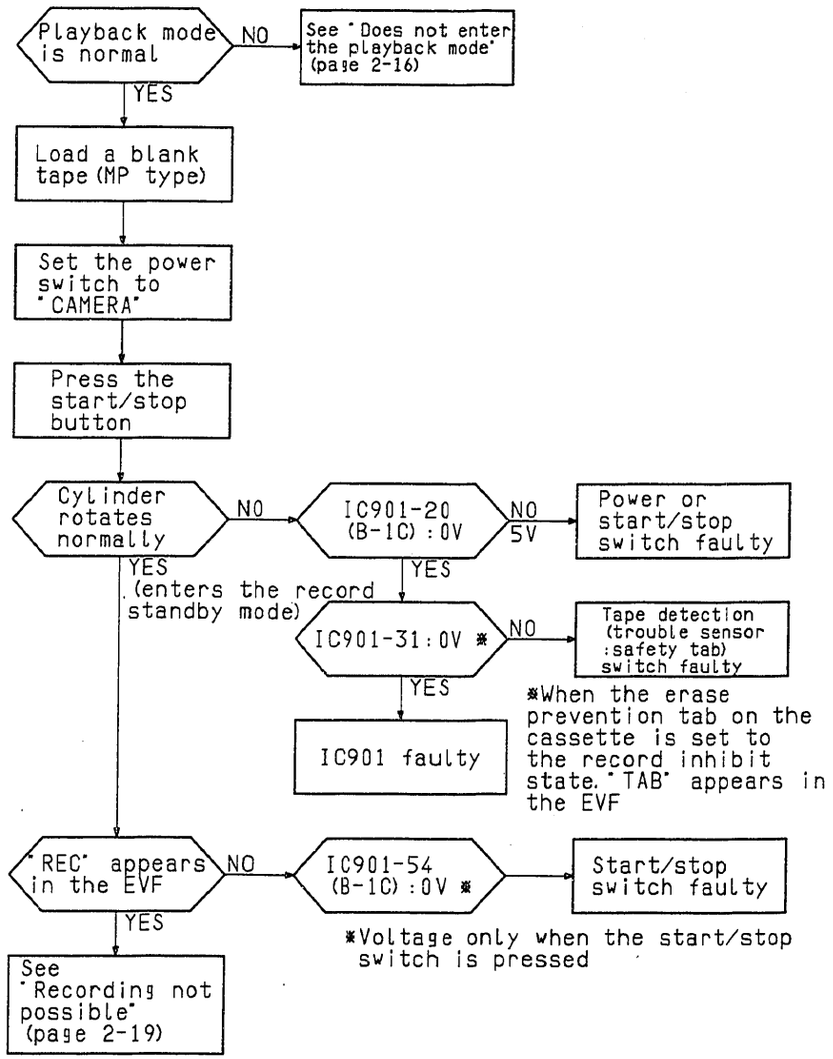
Cylinder motor free-runs



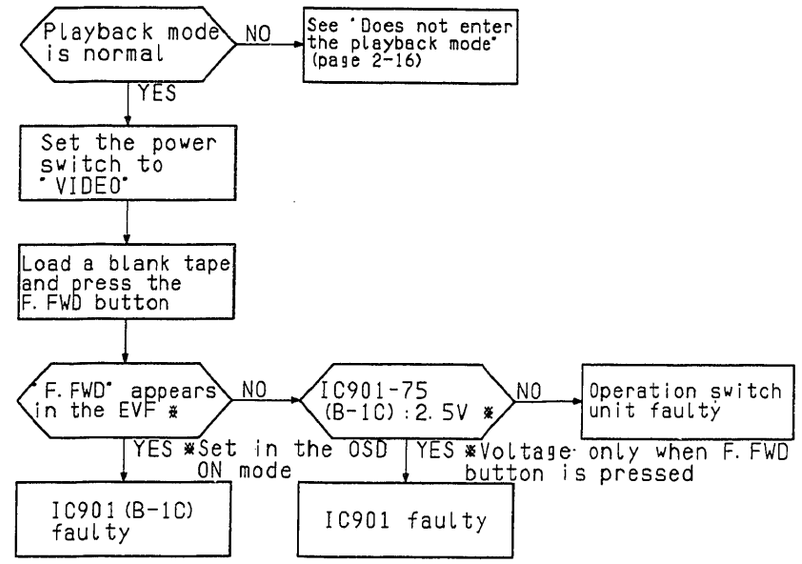
Noise bars do not lock during forward/reverse search



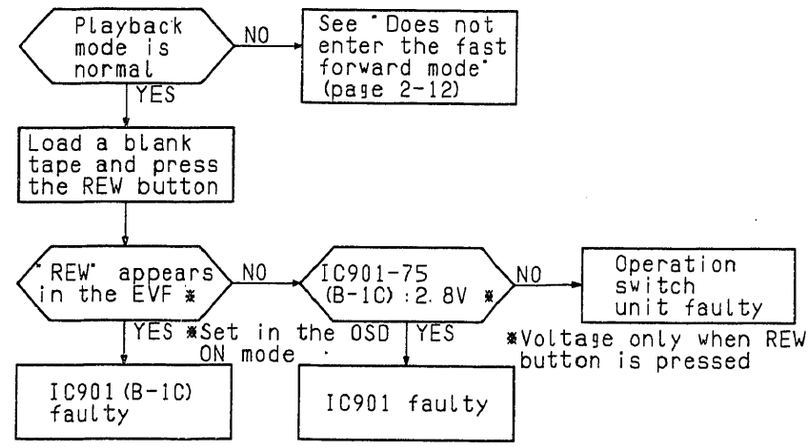
Does not enter the record mode


Playback mode is normal
NO
See "Does not enter the playback mode" (page 2-16)
YES
Load a blank tape (MP type)
Set the power switch to "CAMERA"
Press the start/stop button
Cylinder rotates normally
NO
IC901-20 (B-1C) : 0V
NO
5V
Power or start/stop switch faulty
YES
YES (enters the record standby mode)
IC901-31 : 0V ※
NO
Tape detection (trouble sensor : safety tab) switch faulty
YES
IC901 faulty
※When the erase prevention tab on the cassette is set to the record inhibit state. "TAB" appears in the EVF
"REC" appears in the EVF
NO
IC901-54 (B-1C) : 0V ※
Start/stop switch faulty
YES
※Voltage only when the start/stop switch is pressed
See "Recording not possible" (page 2-19)

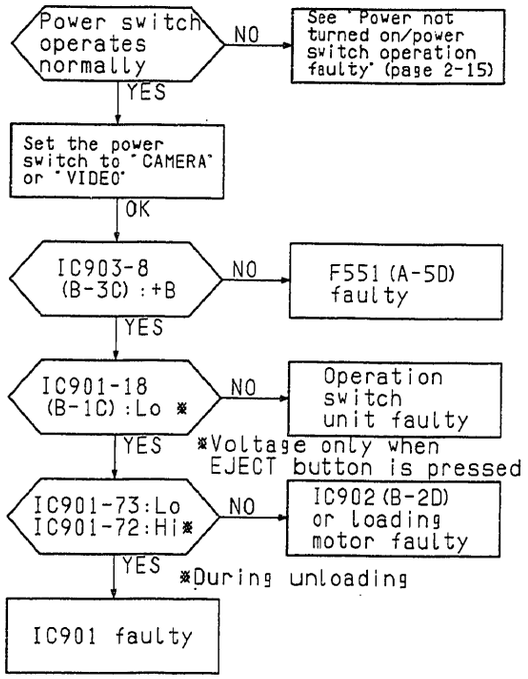
Does not enter the fast forward mode


Playback mode is normal
NO
See "Does not enter the playback mode" (page 2-16)
YES
Set the power switch to "VIDEO"
Load a blank tape and press the F. FWD button
"F. FWD" appears in the EVF ※
NO
IC901-75 (B-1C) : 2.5V ※
NO
Operation switch unit faulty
YES ※Set in the OSD ON mode
YES ※Voltage only when F. FWD button is pressed
IC901 (B-1C) faulty
IC901 faulty

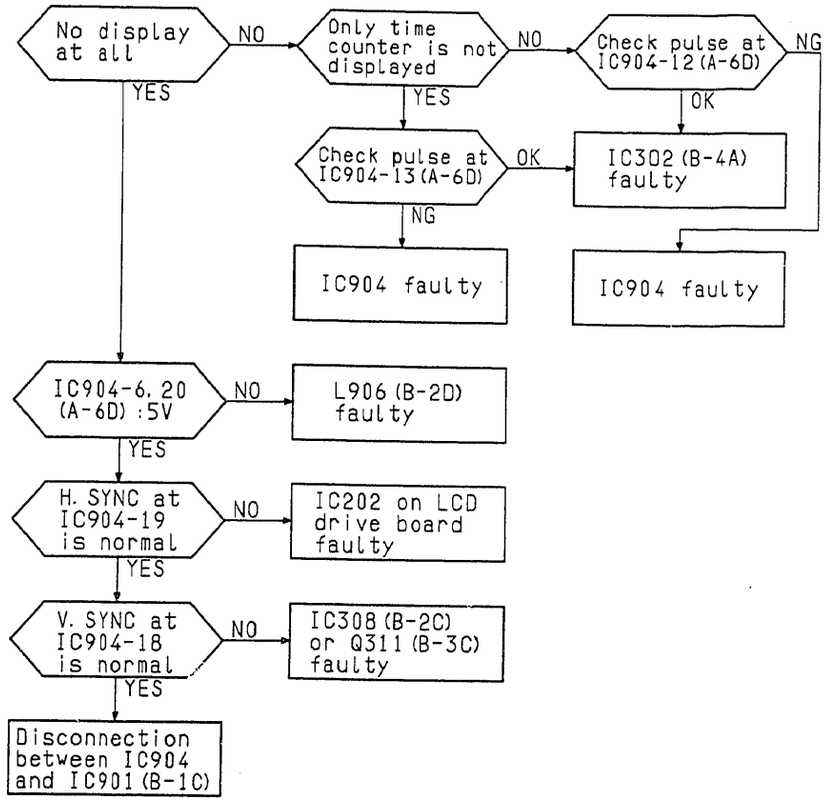
Does not enter the rewind mode


Playback mode is normal
NO
See "Does not enter the fast forward mode" (page 2-12)
YES
Load a blank tape and press the REW button
"REW" appears in the EVF ※
NO
IC901-75 (B-1C) : 2.8V ※
NO
Operation switch unit faulty
YES ※Set in the OSD ON mode
YES
※Voltage only when REW button is pressed
IC901 (B-1C) faulty
IC901 faulty

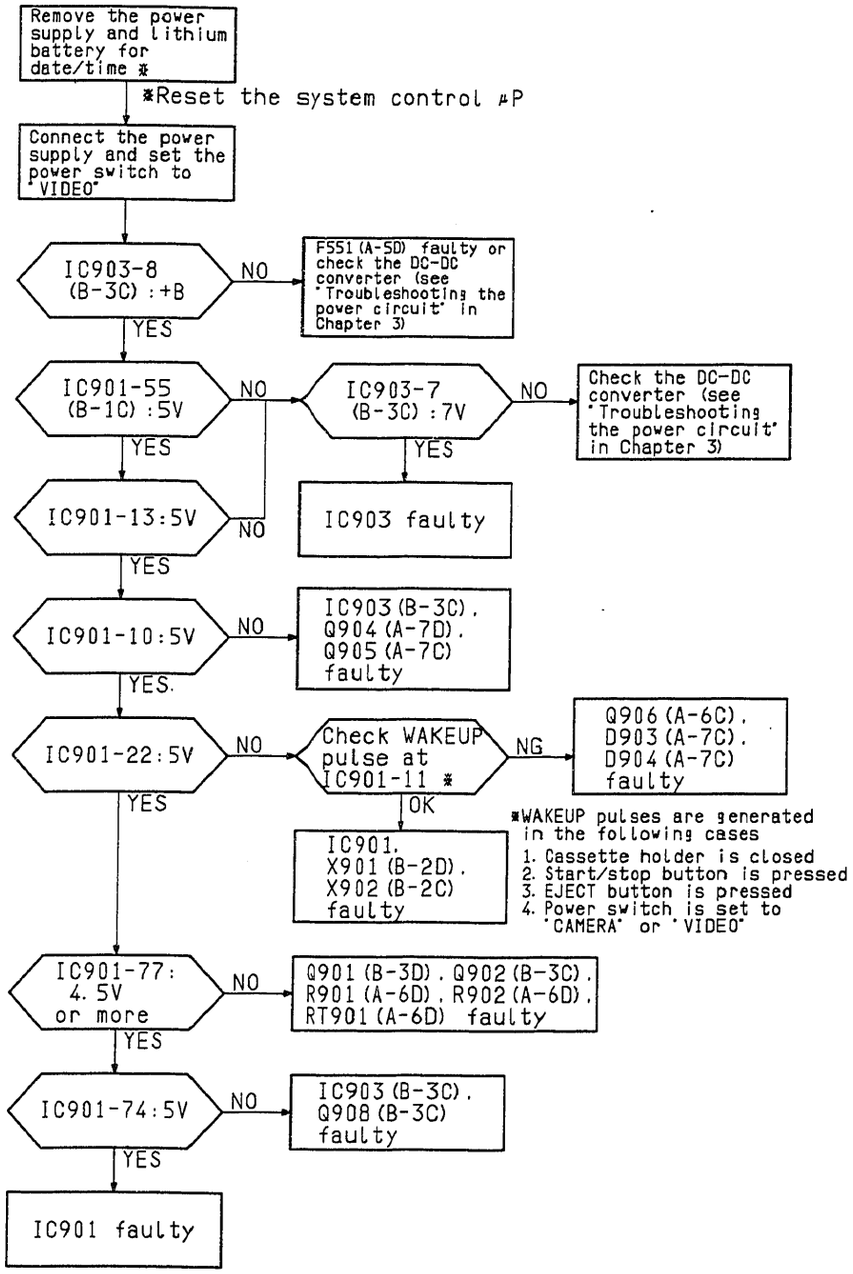
Eject (unloading) cannot be performed



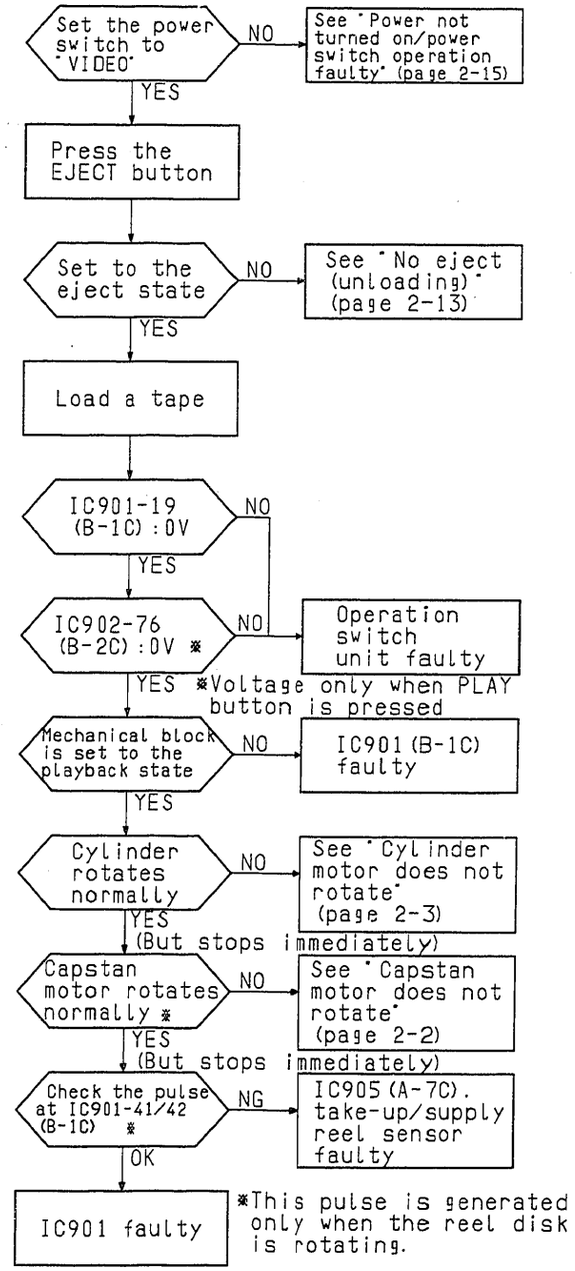
No display



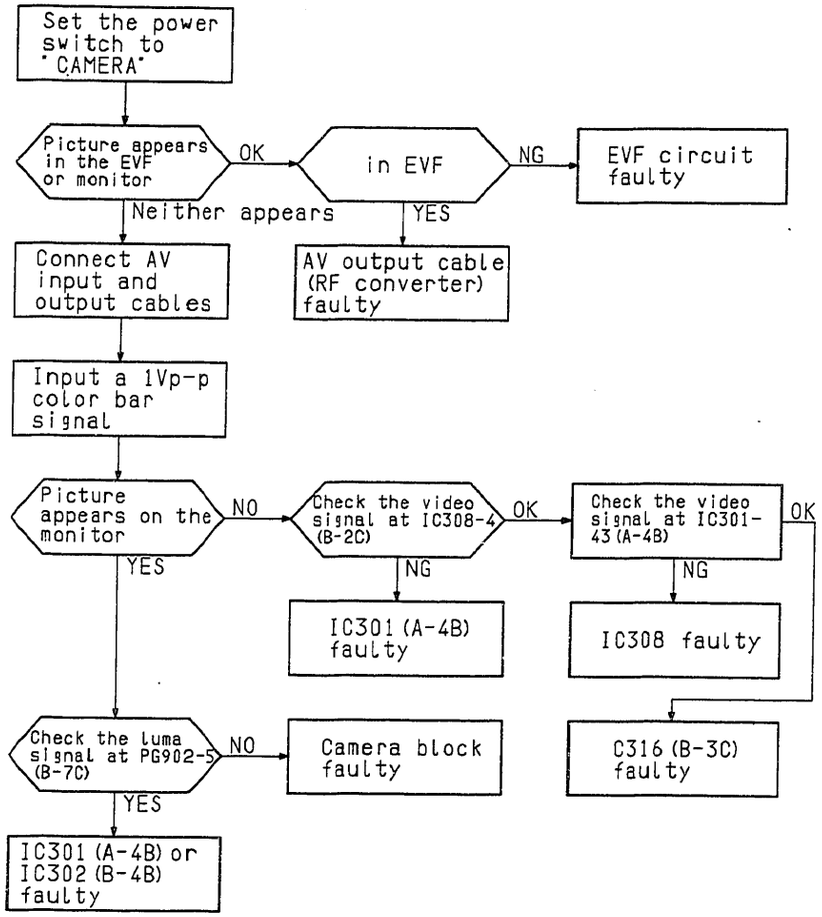
Power not turned on/Power switch operation faulty


Remove the power supply and lithium battery for date/time *
*Reset the system control μP
Connect the power supply and set the power switch to "VIDEO"
IC903-8 (B-3C) : +B
NO
F551 (A-5D) faulty or check the DC-DC converter (see "Troubleshooting the power circuit" in Chapter 3)
YES
IC901-55 (B-1C) : 5V
NO
IC903-7 (B-3C) : 7V
NO
Check the DC-DC converter (see "Troubleshooting the power circuit" in Chapter 3)
YES
YES
IC901-13 : 5V
NO
IC903 faulty
YES
IC901-10 : 5V
NO
IC903 (B-3C), Q904 (A-7D), Q905 (A-7C) faulty
YES
IC901-22 : 5V
NO
Check WAKEUP pulse at IC901-11 *
NG
Q906 (A-6C), D903 (A-7C), D904 (A-7C) faulty
YES
OK
IC901, X901 (B-2D), X902 (B-2C) faulty
*WAKEUP pulses are generated in the following cases
1. Cassette holder is closed
2. Start/stop button is pressed
3. EJECT button is pressed
4. Power switch is set to "CAMERA" or "VIDEO"
IC901-77 : 4.5V or more
NO
Q901 (B-3D), Q902 (B-3C), R901 (A-6D), R902 (A-6D), RT901 (A-6D) faulty
YES
IC901-74 : 5V
NO
IC903 (B-3C), Q908 (B-3C) faulty
YES
IC901 faulty

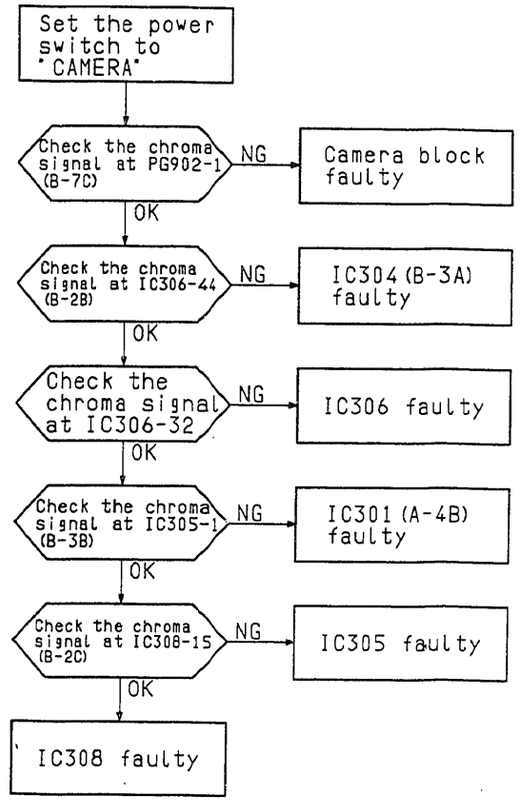
Does not enter the playback mode



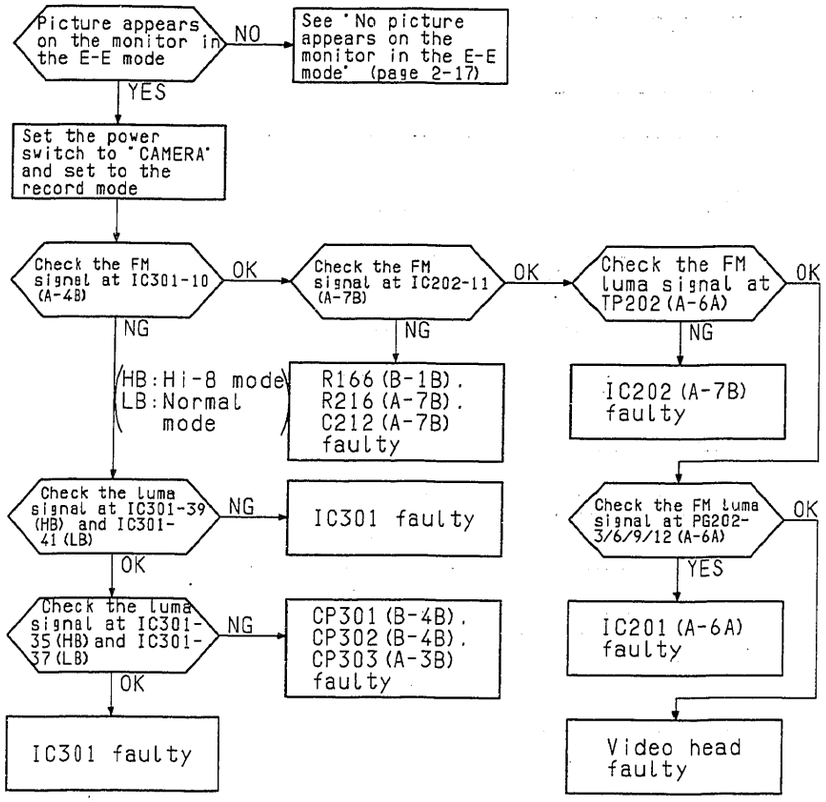
No picture appears on the monitor in the E-E mode



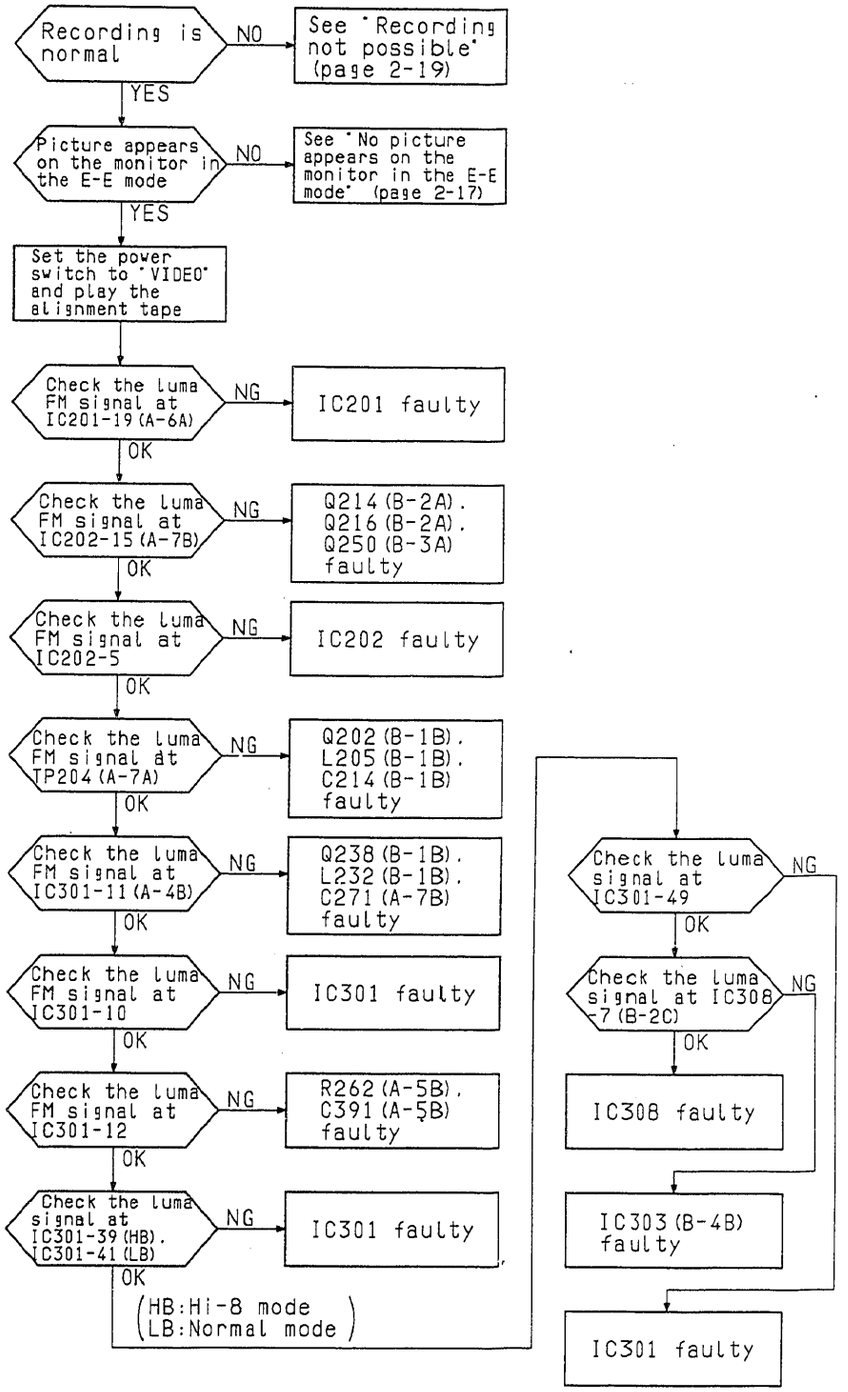
No color appears in the monitor picture in the E-E mode



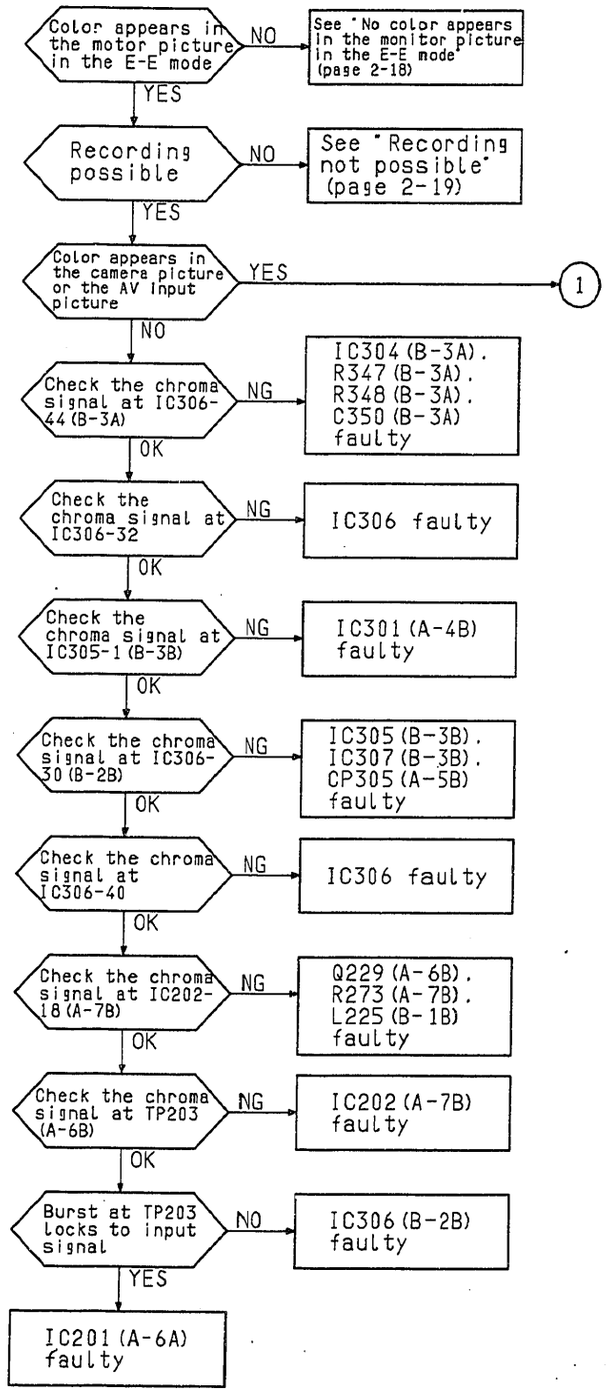
Recording not possible

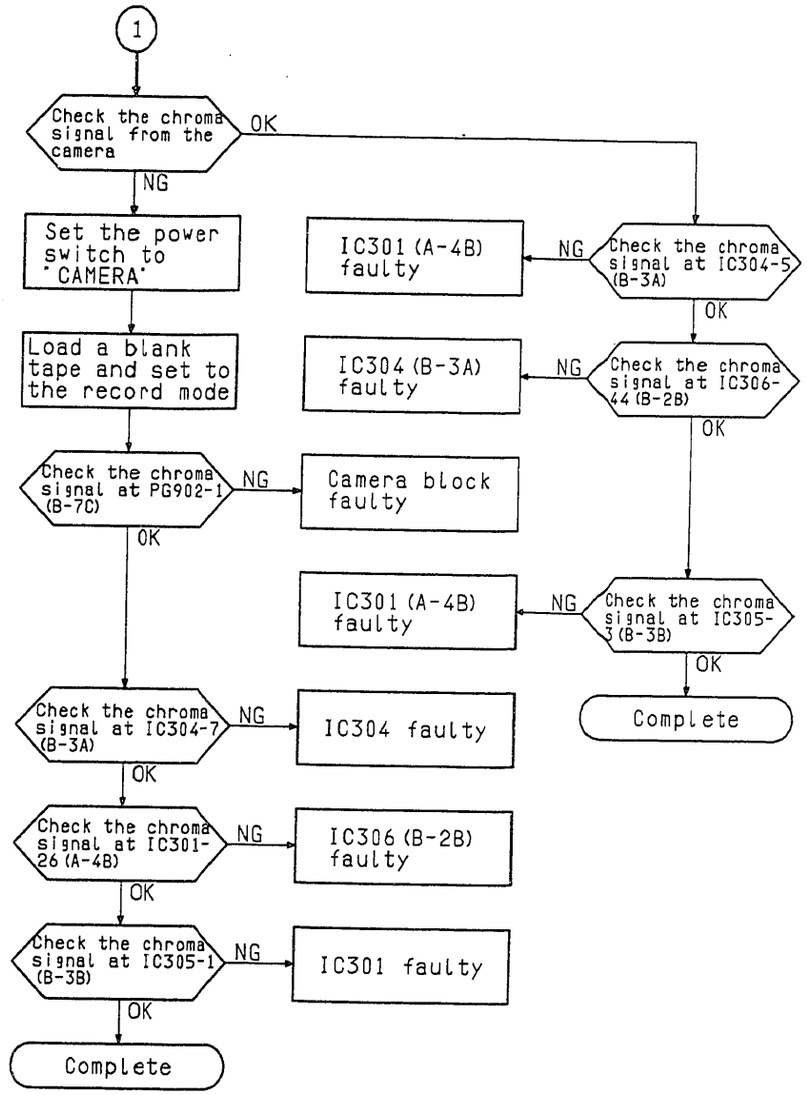

Picture appears on the monitor in the E-E mode
NO
See "No picture appears on the monitor in the E-E mode" (page 2-17)
YES
Set the power switch to "CAMERA" and set to the record mode
Check the FM signal at IC301-10 (A-4B)
OK
Check the FM signal at IC202-11 (A-7B)
OK
Check the FM luma signal at TP202 (A-6A)
OK
NG
NG
NG
HB:Hi-8 mode
LB:Normal mode
R166 (B-1B), R216 (A-7B), C212 (A-7B) faulty
IC202 (A-7B) faulty
Check the luma signal at IC301-39 (HB) and IC301-41 (LB)
NG
IC301 faulty
Check the FM luma signal at PG202-3/6/9/12 (A-6A)
OK
YES
OK
Check the luma signal at IC301-35 (HB) and IC301-37 (LB)
NG
CP301 (B-4B), CP302 (B-4B), CP303 (A-3B) faulty
IC201 (A-6A) faulty
OK
IC301 faulty
Video head faulty

No picture during playback

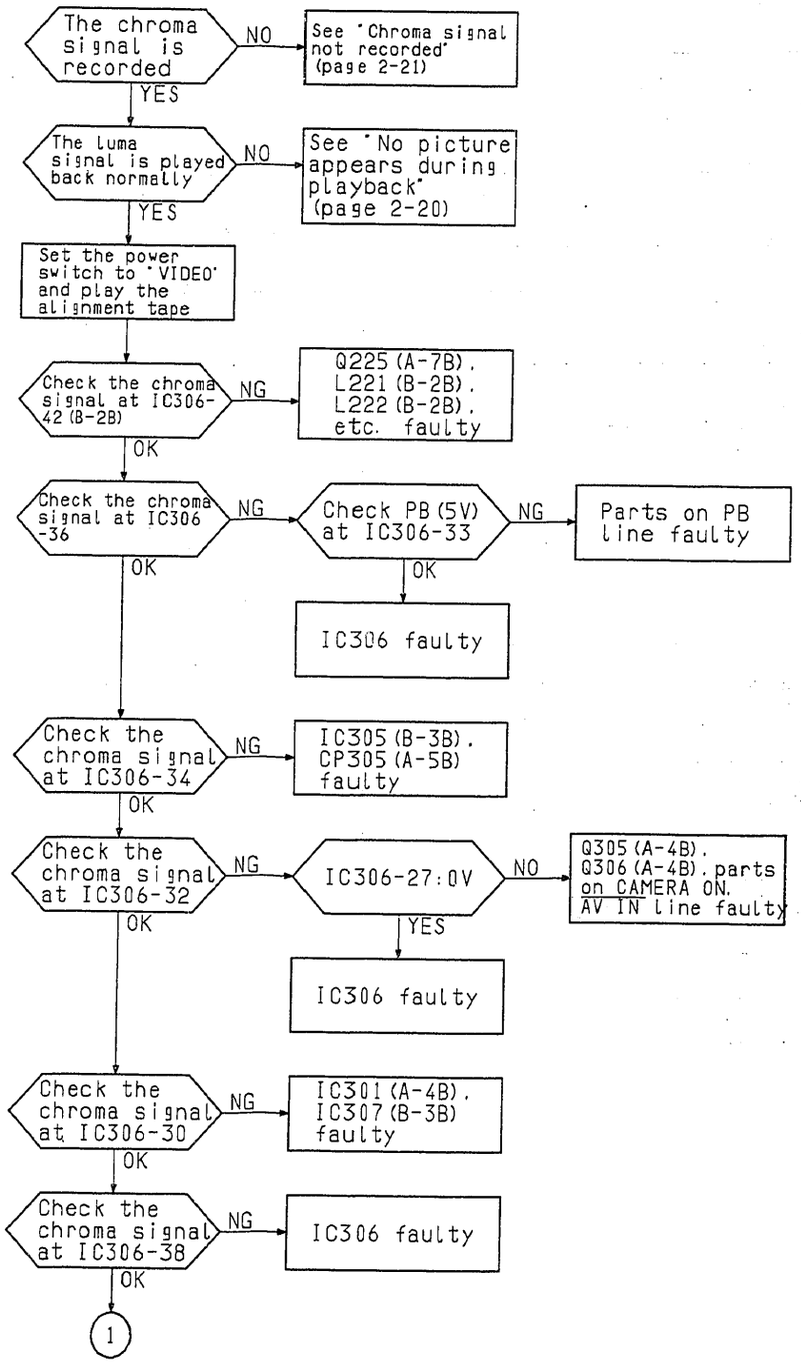


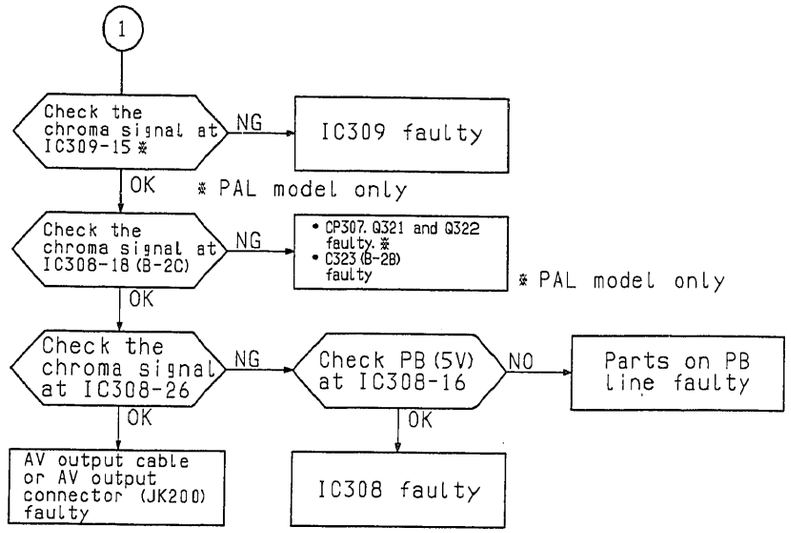
Chroma signal not recorded



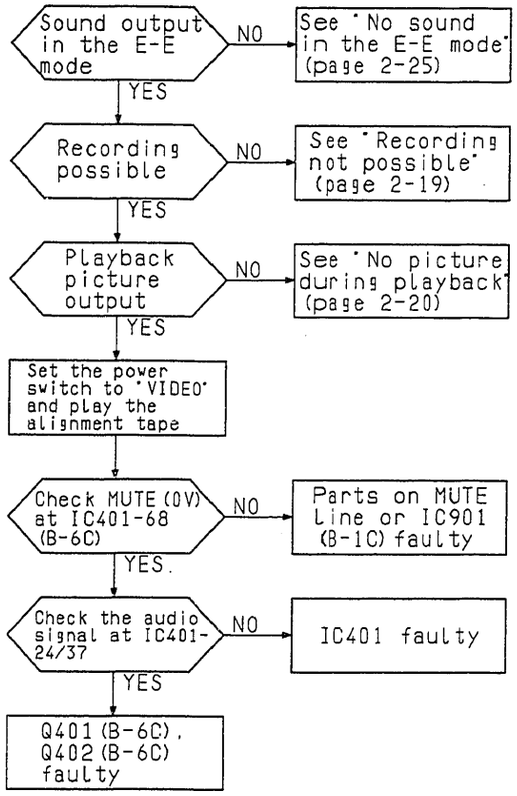


No color in the playback picture

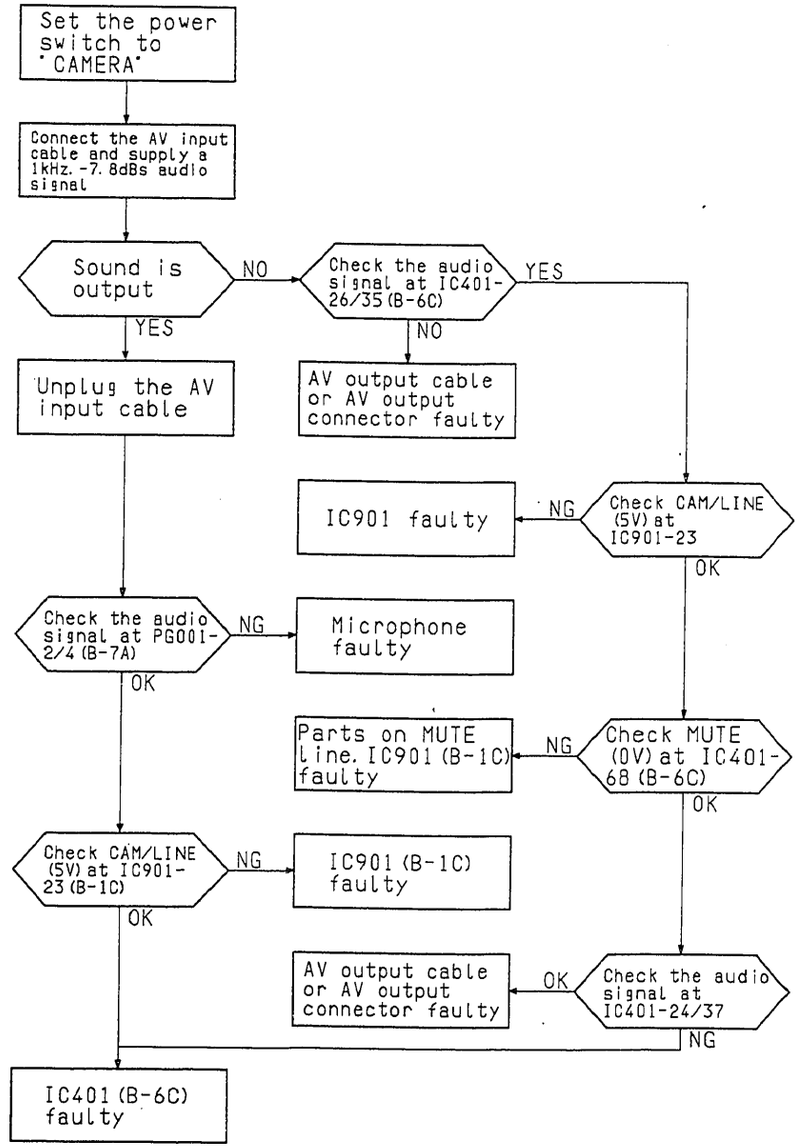




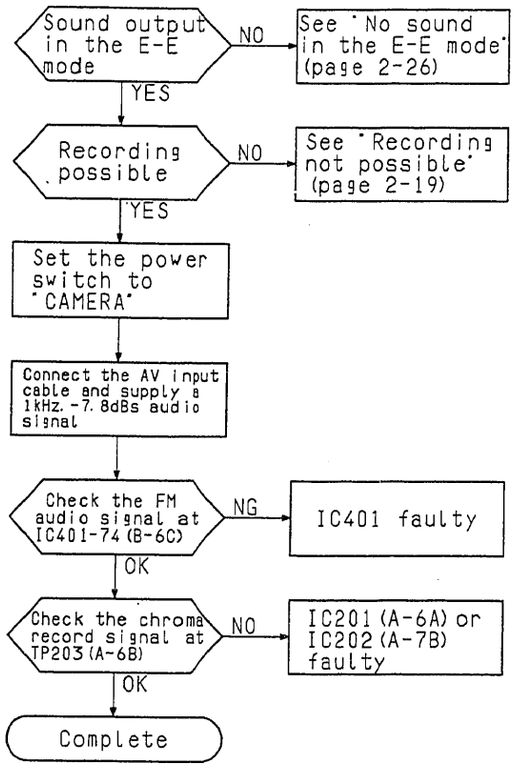
No sound during playback



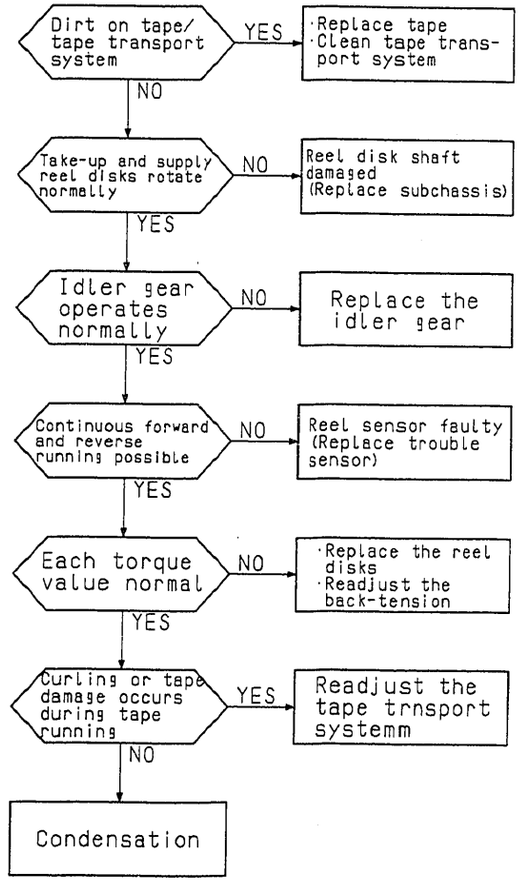
No sound in the E-E mode



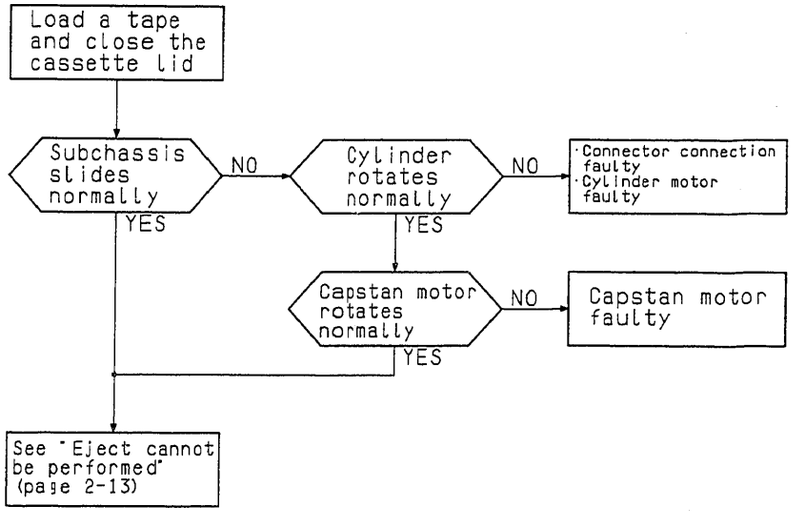
Sound not recorded



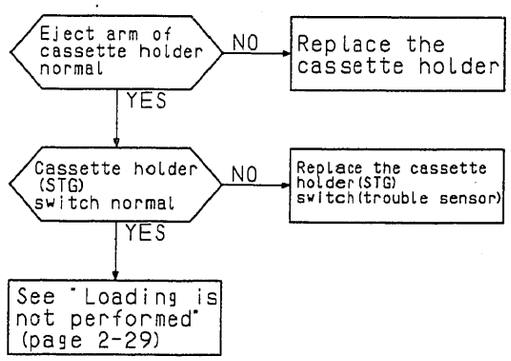
Tape entangled/Tape does not run



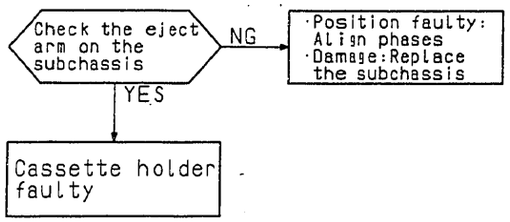
Loading is not performed



Loading with cassette holder lifted



Cassette holder does not lift



Troubleshooting of Special Sections

Troubleshooting the Parts under IC301 (Y Module IC)

Note : Perform this item only for products that have an Hi-8 function.

The following shows the parts mounted under the Y module IC on the main circuit board and describes troubleshooting procedures related to them.

1. Parts of Video Circuits

The table below shows the major symptoms occurring when parts of the video circuits under IC301 become defective.
Use the table together with the troubleshooting flowcharts related to the video circuits when servicing.

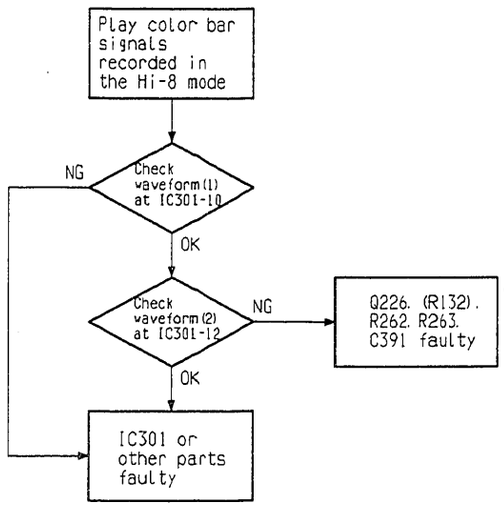
1 - 1. Major symptoms when defects occur in the video circuits

No.	Symptoms when defects occur	Defective parts	Location of parts in schematic and normal circuit operation
(1)	· Defective playback picture. · Defective dropout compensation. · Oscillations when a blank tape is played.	Q226, (R132), R262, R263, C391	· Parts connected to IC301 pins 11 and 12 · Decreases the playback FM signal level by 1dB during Hi-8. MP. MUTE.
(2)	· Defective playback picture · Abnormal noise bars during trick play	(R136), R140, R142, C235, C396	· Parts connected to IC301 pin 11 · Playback FM signal line
(3)	· Defective dropout compensation during play · Defective Y/C separation during recording (only with external input)	R213, R304, C310	· Parts connected to IC301 pin 18 · The video signal from the CCD in IC301 passes. · Cuts off the chroma signal and applies a bias voltage via resistors.
(4)	· Defective liminance signal during play (NTSC only)	Q303, R149, R192, R195, C302	· Parts connected to IC301 pin 49 and IC303 pin 3 · Attenuates the luminance (Y) signal output from IC301 to match its level.
(5)	· Defective E-E video output when an external input is applied	Q304, R144, R145, R146, R148	· Parts connected to IC301 pin 43 · Attenuates the video signal output from IC301 to match its level.
(6)	· Defective Y/C separation during recording (only with external input)	Q332, R150, R162, R301, C392, C395	· Parts connected to IC301 pin 33 · Buffer amp for the video signal output from IC301
(7)	· Abnormality when recording (with external input) · Crosstalk occurs during play (with external input)	Q317, R371	· Parts connected to IC301 pin 45 · The external video input signal passes. · Shuts off the external video input signal during play.

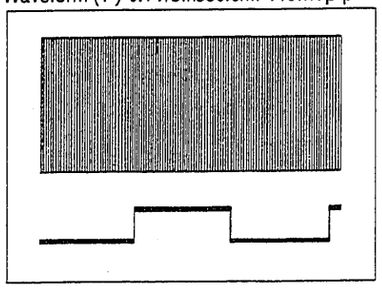
Note : Components in brackets ( ) are not provided with PAL models.

1 - 2.Troubleshooting the video circuits

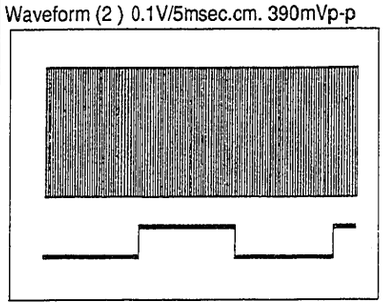
(1) Defective playback picture/ Defective dropout compensation/Oscillations when a blank tape is played



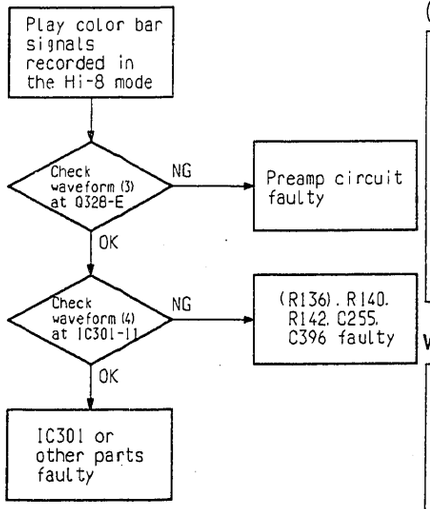
Waveform (1) 0.1V/5msec.cm. 440mVp-p



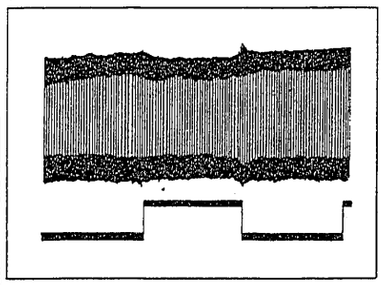
Waveform (2) 0.1V/5msec.cm. 390mVp-p



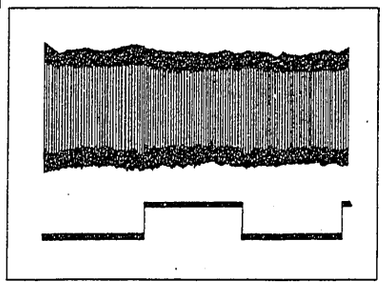
(2) Defective playback picture/ Abnormal noise bars during trick play



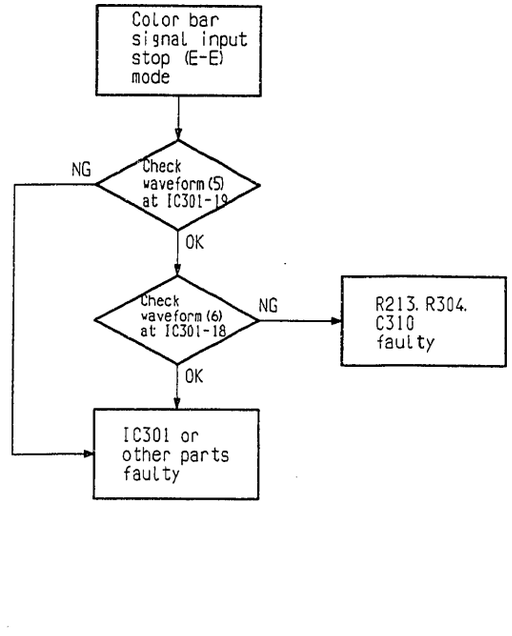
Waveform (3) 0.1V/5msec.cm. 420mVp-p
(reference value)



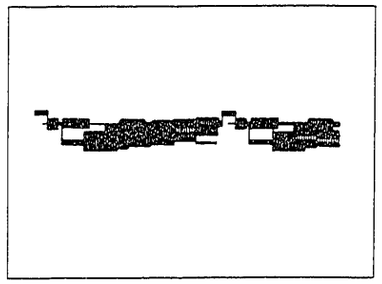
Waveform (4) 0.1V/5msec.cm. 390mVp-p



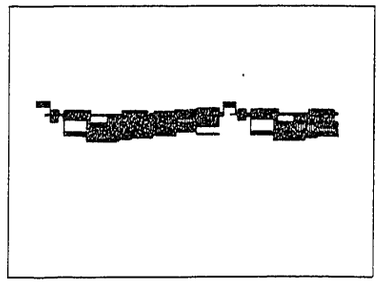
(3) Defective dropout compensation/Defective Y/C separation during recording (only with external input)



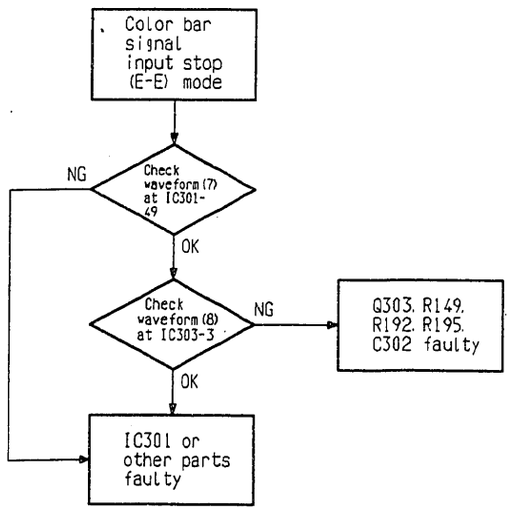
Waveform (5) 0.5V/10 μsec.cm. 0.5Vp-p (1.9V center)



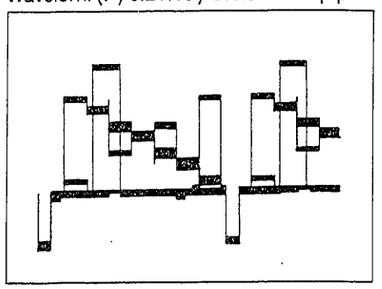
Waveform (6) 0.5V/10 μsec.cm. 0.5Vp-p (2.6V center)



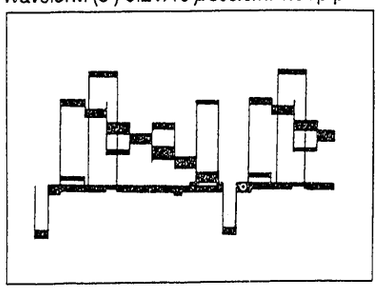
(4) Defective luma signal during play (NTSC only)



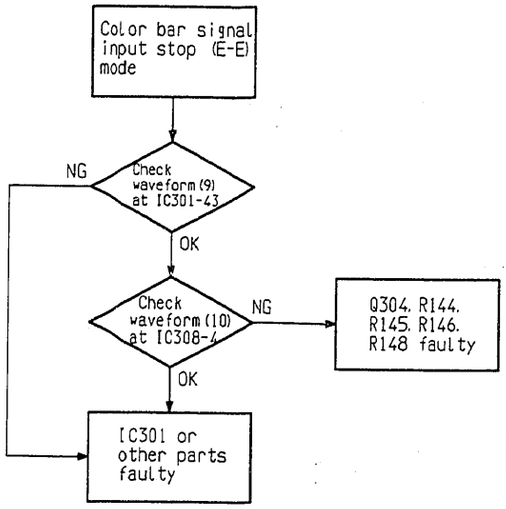
Waveform (7) 0.2V/10 μsec.cm. 1.1Vp-p



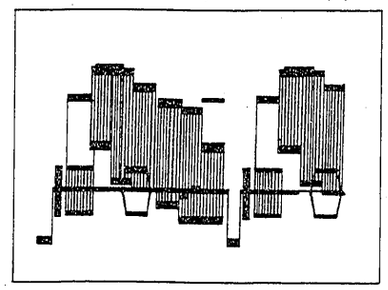
Waveform (8) 0.2V/10 μsec.cm. 1.0Vp-p



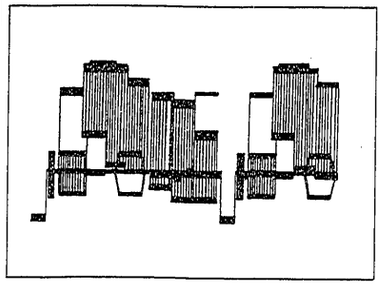
(5) Defective E-E video output with external input



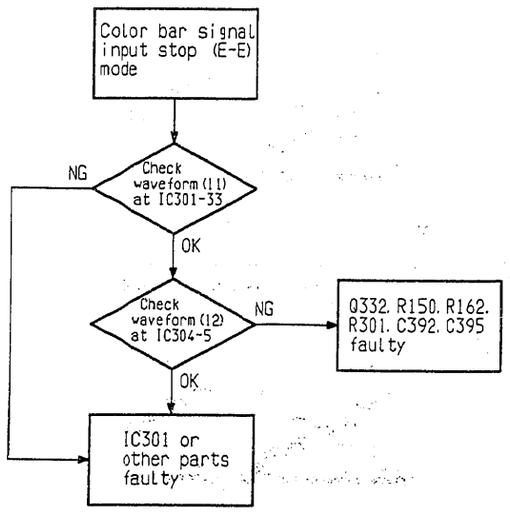
Waveform (9) 0.2V/10 μsec.cm. 1.1Vp-p



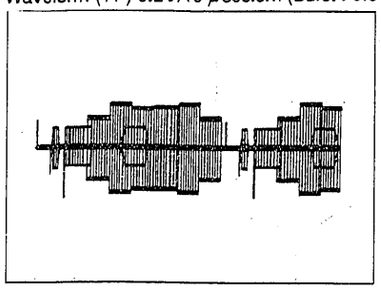
Waveform (10) 0.2V/10 μsec.cm. 1.0Vp-p



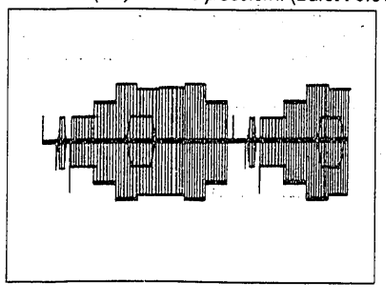
(6) Defective Y/C separation during recording (only with external input)



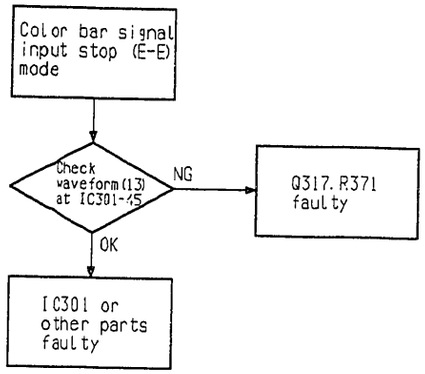
Waveform (11) 0.2V/10 μsec.cm (Burst : 0.3Vp-p)



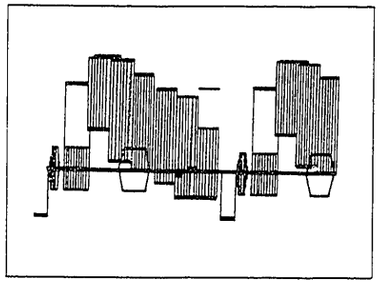
Waveform (12) 0.2V/10 μsec.cm. (Burst : 0.3Vp-p)



(7) Abnormality occurs during recording (with external input)/Crosstalk occurs during play (with external nput)



Waveform (13) 0.2V/10 μsec.cm. 1.0Vp-p



2. Parts of Control Circuits

The table below shows the major symptoms occurring when parts in the control circuits under IC301 become defective.
Use the table together with the troubleshooting flowcharts related to the control circuits when servicing.

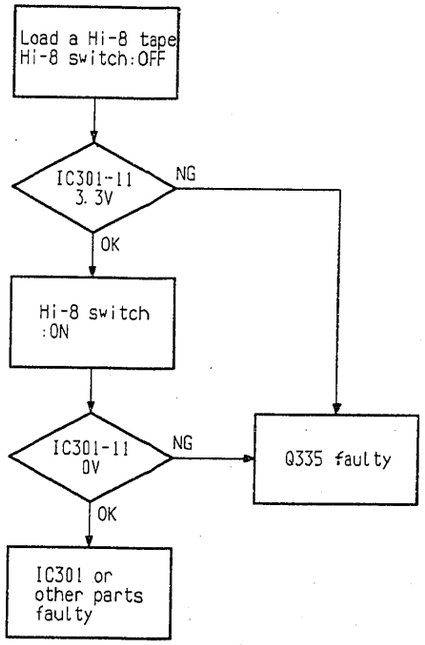
2 - 1. Major symptoms when defects occur in the control circuits.

No.	Symptoms when defects occur	Defective parts	Location of parts in schematic and normal circuit operation
(1)	· Recording in Hi-8 mode not possible · Defective playback picture	Q335	· Parts connected to IC301 pin 11 · Sets IC301 pin 11 to " Lo " when recording on Hi-8 tape in the Hi-8 mode.
(2)	· Defective dropout compensation · during play · Defective tint during play · Defective E-E video output when external input is applied	Q308, D301, R313	· Parts connected to IC301 pin 23 · Controls the voltages at two CCDs in IC301.
(3)	· Abnormality in E-E picture and recorded picture	Q301, Q302, R143, R303	· Parts connected to IC301 pin 44 · Inverts the CAM/LINE signal.
(4)	· No title appears. · Sync distorted by switching between the play and stop modes when a title appears. (NTSC only)	Q334	· Parts connected to IC302 pin 2 and IC303 pin 2 · Detects the SQUELCH signal and shuts off the title control signal.
(5)	· No playback picture	Q305, Q306, R307, R308	· Parts connected to IC301 pin 17 · PB signal inverter circuit

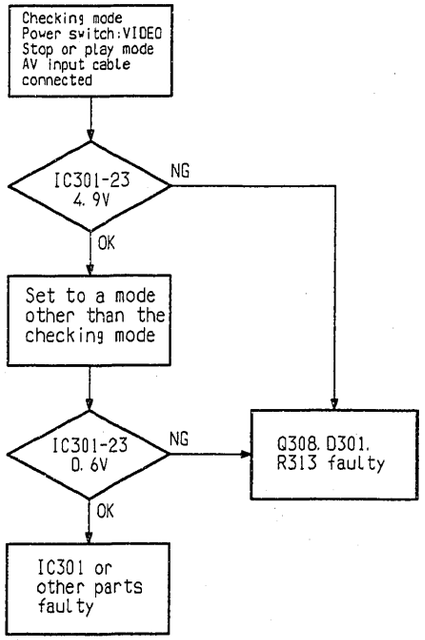
No.	Symptoms when defects occur	Defective parts	Location of parts in schematic and normal circuit operation
(6)	· Horizontal noise appears in playback picture	Q310, R315	· Parts connected to IC301 pin 46 via Q309 and C314 · Turns Q309 on during play and applies the reference voltage (V REF) with low impedance to IC301 pin 32 (VIDEO Vcc 2) through C314.
(7)	· No color appears in title in modes other than play (NTSC only)	R711	· Parts connected to IC701 pin 44 · Inverts the burst flag pulse (BF) in modes other than play.

2 - 2. Troubleshooting the control circuits

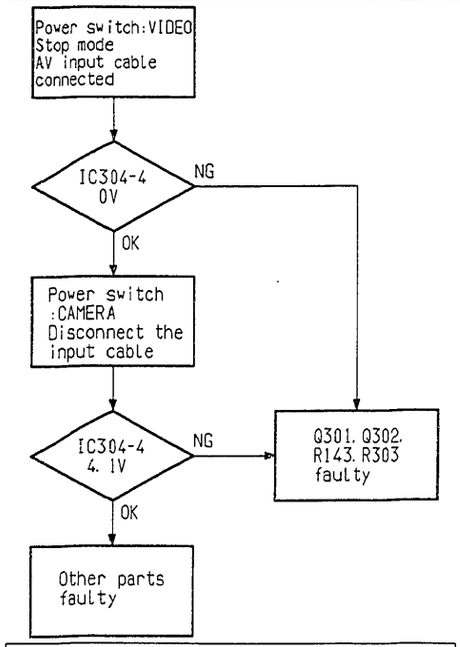
(1) Hi-8 recording not possible/Defective playback picture



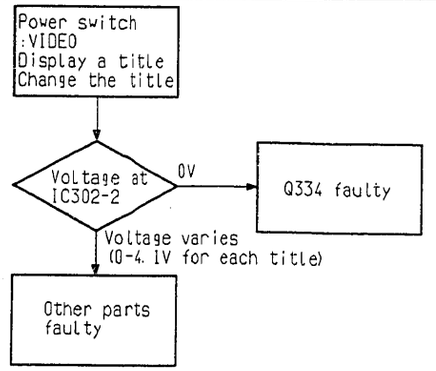
(2) Defective dropout compensation/Defective tint during playback/Defective E-E video output with external input



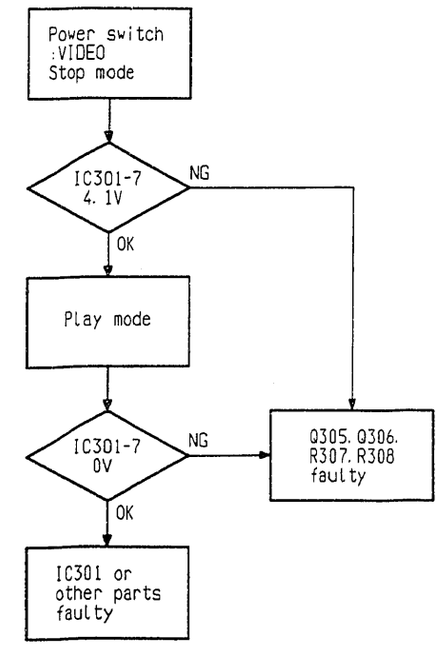
(3) Defective E-E picture and recorded picture



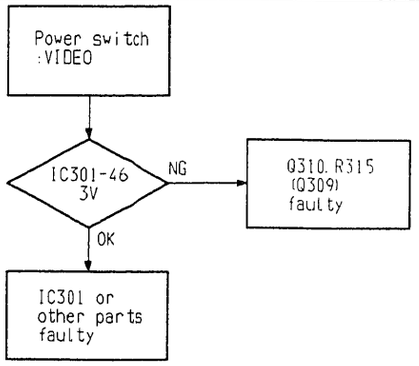
(4) No title appears/Sync distorted by switching between play and stop when title is displayed. (NTSC only)



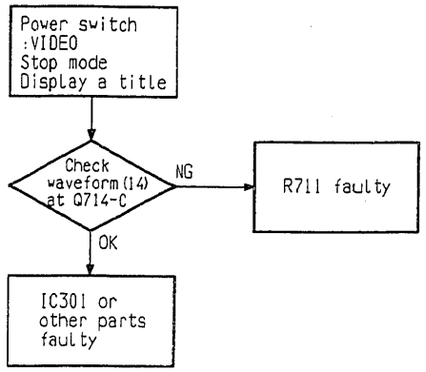
(5) No playback picture



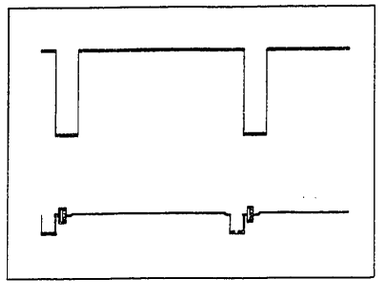
(6) Horizontal noise appears in playback picture



(7) No color appears in title in modes other than playback (NTSC only)



Waveform (14)
CH-1 Q714-C:2.0V/10 μsec.cm
CH-2 VIDEO OUT:0.5V/10 μsec.cm



3. Parts of DC Operation Circuit

The table below shows the major symptoms occurring when parts of the DC operating circuit consisting of capacitors under IC301 become defective.

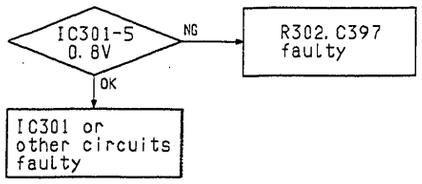
Use the table together with the troubleshooting flowcharts elated to the DC operation circuit when servicing.

3 - 1. Major symptoms when a defect occurs in the DC operation circuit

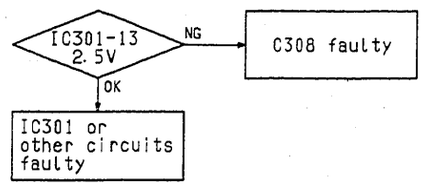
No.	Symptoms when defects occur	Defective parts	Location of parts in schematic and normal circuit operation
(1)	· Defective playback picture	R302, C397	· Parts connected to IC301-5 · Control voltage of FM AGC circuit
(2)	· Defective playback picture	C308	· Parts connected to IC301-13 · DC balanced circuit to generate non-correlative pulses (at IC301 pin 28)

3 - 2. Troubleshooting the DC operation circuit

(1) Defective playback picture



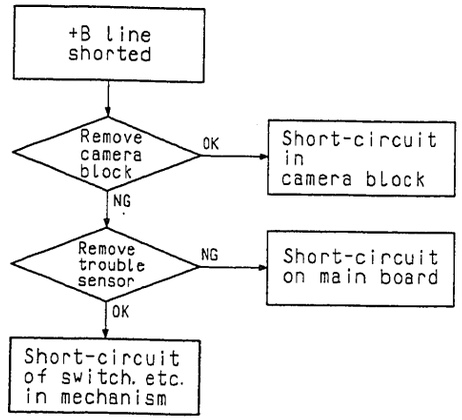
(2) Defective playback picture



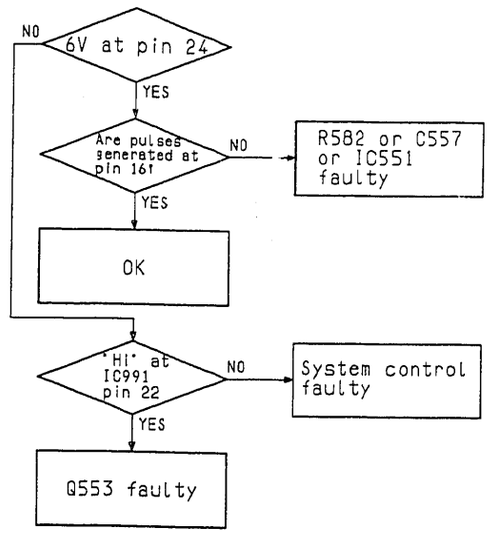
Troubleshooting the DC-DC Converter

Check the flowcharts according to the symptoms.

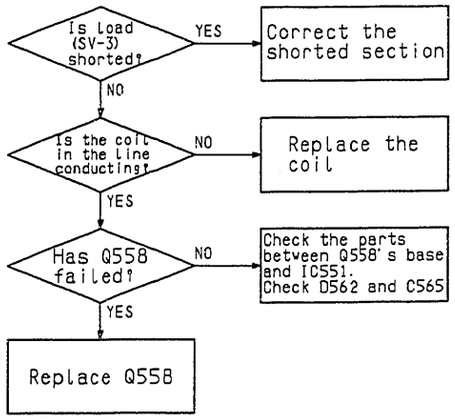
Fuse blown



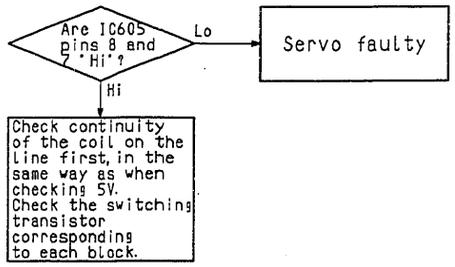
Power not turned on/Check IC551 operation



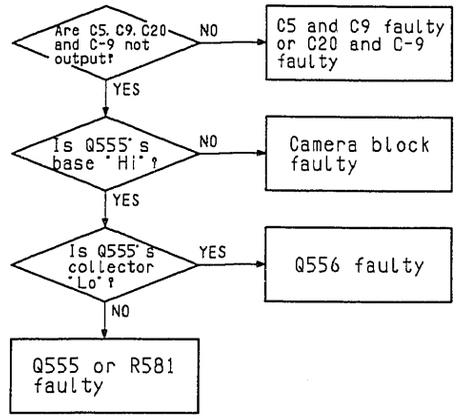
No 5V output



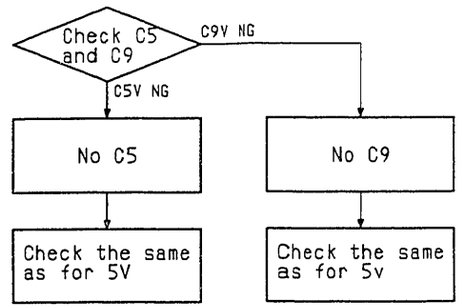
Loading motor, capstan motor or cylinder does not turn


Are IC605 pins 8 and 7 'Hi'?
Lo
Servo faulty
Hi
Check continuity of the coil on the line first, in the same way as when checking 5V. Check the switching transistor corresponding to each block.

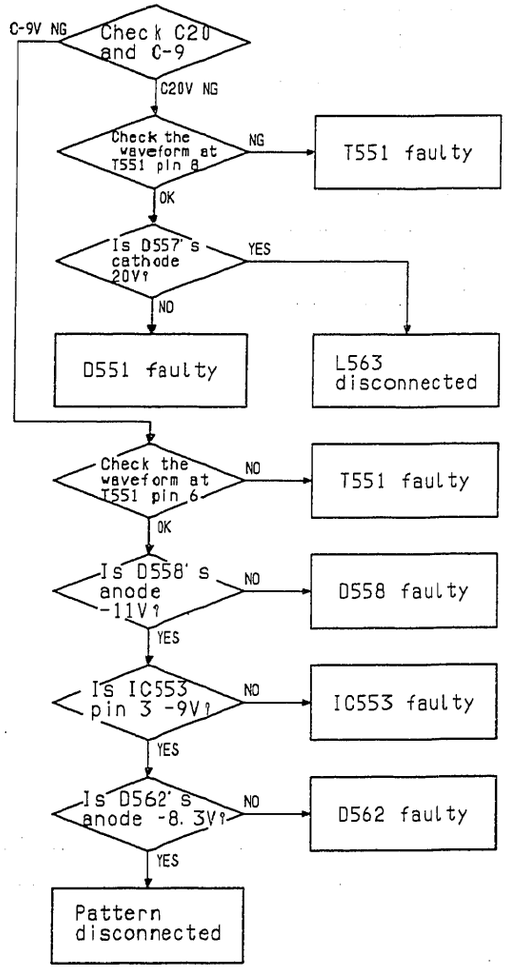
Power only to the camera block is not turned on



No C5V or C9V output



No C20V or C—9V output



HITACHI

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VM-H37E/H38E/H39E
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